



**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD  
RIVER & PLATEAU COMMITTEE**

*February 6, 2018  
Richland, WA*

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

## **Opening**

Dale Engstrom, River & Plateau (RAP) Chair, welcomed committee members and introductions were made. The January 2018 meeting minutes were approved by consensus.

### *Announcements*

Laura Buelow, Environmental Protection Agency (EPA) announced a new permanent manager, Dave Einan at the local EPA office in Richland, WA

## **100-BC Area Proposed Plan Overview**

### *Agency Presentation*

Dale Engstrom introduced the topic of the 100-BC Area Proposed Plan and Steve Balone who is with the U.S. Department of Energy – Richland Operations Office (DOE-RL). Steve provided the members an overview of the 100-BC Area Proposed Plan.

Key points from Steve's presentation:

- The 100-BC Area Proposed Plan is currently in the draft stage. The 100-BC area is about 4.5 square miles with two deactivated nuclear reactors. B reactor was constructed and operational for 25 years before it was deactivated in 1968. C reactor was constructed and operational for 18 years before it was deactivated in 1969.
- The source operable units for the 100-BC area are BC-1 and BC-2, in which the boundaries have evolved over time based on various influences. The [map](#) on slide four of the presentation shows the boundary areas, as well as the remediated waste sites within the 100-BC area.
- The remediation of the 10-BC area waste site began in 1995. The remediation consisted of removal, treatment and disposal (RTD). The goal for remediation was to remove soil and other contaminants above the remedial action goals (rags) for protection of the groundwater and surface water. Two of the major digs in the 100-BC area were C-7 and C-7:1. Both of these went to groundwater and were Chrome6 source sites.
- The land in 100-BC area has been recontoured and revegetated. The groundwater moves perpendicular to the [water table contour lines](#), as shown on slide eight of the presentation, which is north and northeast towards the Columbia River.
- The Hexavalent Chromium Plume evolution over the years has been visible, as more data become available. The Plume shape has remained steady between 2011 – 2016. As of 2016, there are about 6,000 square feet of shoreline above the 10 micrograms per liter.
- There are two plumes of Chrome6. The upper plume is much broader, which has been a primary focus of study. The lower plume is in a tighter formation and moves slower than the upper plume.

- The key well trends show the variances of Hexavalent Chromium concentrations. Well 199-B3-47 is located at the center of the highest concentration of Plume and is considered a downward blip on the chart. This is due to the high river stage. The higher peak in well 199-B4-14 is believed to be due to the excavation.
- Strontium 90 has been a cause of concern over the years. The Strontium 90 key wells near the shoreline show drinking water standards at 8 curries per liters.
- Another Plume of concern is Tritium. The Tritium source of the site was excavated. All the wells containing Tritium were below drinking standards since 2015.
- Trichloroethene was detected in wells 199-B5-5, 199-B5-6, and 199-B5-11. The data on the other wells that contain Trichloroethene is not available at this time.
- The scope of the proposed plan consists of Interim Actions, Remedial Investigation, and Feasibility Study. Under interim actions, 82 waste sites were remediated (RTD), 27 waste sites were determined to not require remediation, and 3 waste sites were not addressed. The remedial investigation is the evaluation of site-specific data and information for all 112 waste sites. After the feasibility study, it was determined that 82 waste sites were protective of human health and the environment with unrestricted use and unlimited exposure. 30 waste sites require further action to ensure protection of human health and the environment for unrestricted use and unlimited exposure.
- Seven of the 30 waste site that require further action, have residual contamination which poses a shallow direct contact risk for residential use and/or threat to groundwater or surface water quality. The other 27 waste site have residual radionuclide contamination in the deep zone and do not have potential impact on groundwater or surface water. None of the sites have residual contaminant concentrations that pose a potential risk to the ecological receptors.
- Components of remedial actions were assembled into 6 different alternatives. Monitored Natural Attenuation (MNA) with Institutional Controls (ICs) are listed in five of the six alternatives with Pump and Treat listed in four of the five alternatives with MNA for groundwater. Five of the 6 alternatives list remediation timeframes projections of 187 years. These timeframes are associated with the decay of radionuclide contamination located at a depth of 13 feet at 118-B-8:4.
- Alternative two is the preferential alternative. Alternative two is estimated to cost \$23 million, which is significantly less than the other alternatives. Alternative two achieves protection of human health and the environment, as well as satisfies relevant and appropriate requirements in a reasonable timeframe.
- With Alternative two, the projections for Hexavalent Chromium show a reduction of plumes over the next 60 years. The Stontium-90 concentration projections show a reduction over the next 125 years

## *Agency Perspective*

Laura Buelow, EPA gave her perspective on the 100-BC Proposed Plan. Laura stated that the 100-BC Proposed Plan was supposed to be the first Remedial Investigation/Feasibility Study (RI/FS) proposed plan released. About 8 or 9 years ago, EPA came to the HAB for recommendations on C-7 and C-7:1 and the path forward. C-7 and C-7:1 waste sites were excavated. Once the excavation was complete, EPA decided to step back for three years to reevaluate 100-BC before making any decisions for a path forward. Within this timeframe, new wells were installed and we were able to collect more data. The modeling that was conducted is lining up well with the groundwater results. A model is always model, so we know it's not going to be exactly 60 or 70 years but the projections are promising with the amount of Chromium that the model predicts. Some of our data comes from work that was done on the Columbia River where we could see the Chromium in our results. We went back to the Columbia River and conducted an evaluation of the changes on an hourly basis, daily basis, and a seasonal basis as a follow up to the RI/FS on the shoreline. This evaluation gave us an idea of where the Chromium was hitting where the ecological receptors could be. We have evaluated the cost of pump and treat, combined with K area so it can operate long enough and systems are able to be replaced as needed. When we initially looked at the costs for pump and treat, the costs were very high. Compared to the costs seen at 100-D, H, K, and the costs of operating pump and treat systems for this amount of time is in the ball park. When looking at this, we are above a standard, but what does that actually mean for the ecological receptors in the river. We have an ecological risk assessor from the U.S. Geological Survey (USGS) that looks at all of this information. We have yet to see the next version of the RI/FS ecological chapter, as we have had a lot of discussions of the ecological chapter and clearly laying it out there. We have had a lot of comments on the ecological chapter, as we don't believe it clearly lays it out there. We looked at the list of endangered species of fish, such as Salmon and Steelhead. We looked at a lot of the research that PNNL and USGS has done. The ambient water quality criteria of 10 is not based on Salmon. The most effective number we have for Salmon is in the hundreds. So, we determined that endangered species are not threatened from 10. Then we look at more of a population level. The most sensitive species that come up to 10 are from a lake system. In the draft document that was a reworking of the ambient water quality criteria that was taken back out. Energy brought that information to us, so I ran it by USGS and some of EPA's ecological risk assessors. It was determined that Energy had not done the necessary amount of work to re-do that standard, but somehow that ended up in the RI/FS and will be taken out again. We are not changing the ambient water quality criteria for 100-BC. The information did tell us that some of the most sensitive type of species are the lake type species that we would not expect to have, but we haven't done the full species inventory. We looked at the length of shoreline and the amount impact on the population. We don't feel that we have ecological risk on the amount of Chromium. It's not an easy decision to make for 100-BC, as it is not clear cut like 100-D, H and K. We had to look at the risk reduction for spending an extra \$100 million dollars to operate a pump and treat system for 40 years.

### ***Committee Member Questions (Q), Responses (R), and Comments (C):***

*Note: This section reflects individual questions, comments, and agency responses.*

*Q: "What is the significance of the BC-1 and BC-2 boundary lines?"*

R (Steve Balone, DOE-RL): "Both boundaries areas are groundwater source operable units."

C (EPA): "100-BC is one of the Operable Units (OUs) that did not have an interim decision on the groundwater."

C (EPA): “DOE and EPA have met to discuss an update to the star chart on slide 19 of the presentation. These updates would be based on comments from EPA and Oregon Department of Energy.”

*Q: “You mentioned TMV. What does TMV mean?”*

R (DOE-RL): “TMV means Toxicity, Mobility, or Volume.?”

*Q: “It appears that there is no active pump and treat going on and there are no intentions to pump and treat in the future?”*

R: “Correct. In Alternative two there will be no pump and treat.”

*Q: “So are you using CERCLA criteria or Balancing criteria?”*

R (EPA): “Yes.”

*Q: “Does Washington State Department of Ecology (Ecology) have any comments on the 100-BC Proposed Plan?”*

R (Ecology): “Not at this time. Whenever you’re going through the balancing criteria, you have to read it very carefully and we have not done that yet.”

*Q: “On the slide 19 of the presentation, it shows four stars on implementability for Alternative two. Is this because you are not doing anything, so therefore it’s easy to implement?”*

R (Dr. Jim Hanson, DOE-RL): “Were still doing monitoring through this process and making sure the remedies performing as intended. We’re doing five-year reviews and identifying if there is something unexpected coming up. If there’s a determination by EPA that it’s not protective then we will certainly have to go back and revisit the Record of Decision (ROD).”

C: “It just seems to me that giving four stars to something for not doing much is a little bit backwards.

R (EPA): “That’s why it is one of many criteria.”

R (DOE-RL): “There is remediation being performed under that alternative but it is fairly straight forward.”

C: “Everything you see here is implantable. I think you confused implementability with costs.”

C: “There isn’t a star rating given for cost so where is that factored in other than implementability.”

C: “While I understand what you were talking about, I also assume that you are digging up the 187-year problem and getting rid of it.”

R (EPA): “No, were not.”

C: “Okay so that’s a problem because you can reduce it to 39 years, which is better than just letting it sit there. I understand that you are going to be using the 100-K pump and treat system, but you will need to run lines to 100-BC to do that, so you are not building a new system, but you may have to re-tool some of the stuff in the 100-K place.”

R (EPA): “Its estimated to last longer than it’s needed to for 100-K so then all of the repairs over time will come to the 100-BC costs since it was an add-on until 100-K was to be done then it would be a full cost.”

C: “But the benefit of doing that, not only are you reducing the amount of Chromium that is going in to the river. By control the way that you pump and treat you can build a water mound or fence of high water with the injection wells and push the water over to where you are extracting it. They already put injection wells in 100-D and H in places to extract away from the river.”

R (DOE-RL): “Those suggestions are factored into the other alternatives, that’s why you get the other timeframes for the Chromium. The Strontium-90 is much more difficult to capture with pump and treat. That is why you are not seeing any change with Strontium-90. The 187 years at the site for the reactor is based on a residential exposure. For the radionuclides, the assumptions for the scenario are based of residents living on that waste site and consumption of food grown from that waste site. At 13-feet down next to the reactor is presently a museum and forecasted to be a museum for a long time so going down 13-feet has the strong potential of disrupting the foundation. That all factored into this as well because if for some reason in the future the reactor is removed, that waste site underneath the foundation of the reactor would be addressed through that process. There is not decision in place for removing reactors at this present time. There is not currently a risk because it is 13-feet down and we looked at other risks and scenarios, so that determined no risks to human health or ecologically. We looked at Strontium-90 and the ecological risks associated with the groundwater getting to the river. The human health drinking level was eight curries per liter. The risks on an aquatic level or to a fish is 50,000 curries per liter. The highest risk associated with groundwater would actually be through seeps and a mammal drink from that seep over a long period of time and that is at 278 curries per liter. So presently there is no ecological risk and, in the future, there will be no ecological risk given the levels that we have.”

C: “The definition of timeframe in here strikes an odd cord because reasonably acceptable timeframe of 187 years doesn’t seem reasonable to me and I can’t imagine it would seem reasonable to the public either. When you look at these alternatives and some of the actions, the assumptions are not clear. It seems that it has been assumed that there will not be any catastrophic tank leaks that would push into 100-BC, that there will not be any earthquake or flood. That is what it seems like based on this presentation. This has always been a concern that when you identify these specific contaminates of concern it makes me think that there a concern of the combination of contaminates combining with each other?”

R (DOE-RL): “In the risk assessment we do look toward the future, we do look at the combination of affects based on the modeling. There is always a level of uncertainty with any model. That is why EPA requires DOE-RL to review these every five-years until we reach standards. I can’t imagine that even if we met the standards that EPA wouldn’t require DOE-RL to monitor it several more times, if not indefinitely. We do look the potential for combined risk into the future. In the Central Plateau we have done a lot of work and we found that currently there has been a flow reversal through the gap, so there’s no longer a flow to the north. That happened in 2011 and has remained constant since then. So, we don’t expect anything going north any time soon.”

C: “It was interesting to hear that there hasn’t been a survey of all the potential of affected species. I have wondered about the climate change too and if that is factored in this, as there could be changes in the species that are there over time. I live in the Puget Sound area and we see the effects of climate change to the species. I was also wondering about the issue of potential dam failure or floods or even changes in the

climate regime over a period of 60 years let alone 187 years. How came to the decision of what standard to use in terms of a residential standard because this is going to be an area that attracts people. This is concern because you have the B Reactor Museum and the Hanford Reach, so you have people visiting to this area.”

R (DOE-RL): “The catastrophic things that might happen in the future provides a lot of uncertainty in those low probability events. CERCLA does not require you to factor that in, so there is always a chance for something catastrophic to happen. As far as climate change, EPA has not developed any methodology they have accepted going forward. EPA looks at all the available research and the most sensitive species, which then determines the criteria. That is why the Hexavalent Chromium is based on adapting the small species found in lakes and ponds. Those most sensitive species are intended to represent species we don’t know anything about, like mayflies that are very difficult to raise in laboratory and much more difficult to use in a toxicity testing. We recognize that much more needs to be done before it was to change the criteria. So, the affects climate change, sure it’s possible we could have vast changes but the important thing that we look at is the endangered species that we have now. Looking at individual levels to protect rather than a population. The Chromium going to the river is much lower concentrations that would cause an affect for an endangered species. That evaluation is in the RI/FS and we have had people from the National Oceanic and Atmospheric Administration (NOAA) look at that evaluation to see if they have any concerns, which they have not indicated that they have any concerns. The exposure scenarios that have been included are based on Washington State Model Toxics Control Act (MTCA) of soil ingestion rate or inhalation, the lower of the two. We follow the states guidance for exposure. For radionuclides, it’s much more complicated, as we include sleep time and food grown on site. All of this exposure is based on the foot print of the waste sites, which is 30 years of food consumption from food grown only on the waste site.”

C: “So, as far as the use criteria, I assume that no irrigation is used and your assumptions are based on farming on the site would not need irrigation.”

R (DOE-RL): “It includes the transport from surface to groundwater, so it includes the groundwater risk associated with irrigation. The use of irrigation for a drinking water source for farming is not included. We would need to have a risk assessor to evaluated in order to fully explain that pathway.”

C: “There is a whole lot to this document and I do want to thank DOE-RL and EPA for all of the effort and cleanup work that has been done. We don’t believe it’s sufficient. We (Yakama Nation) have submitted comments and Laura Buelow, EPA is meeting with Yakama Nation to further discuss our comments.”

*Q: “You mentioned fish species being evaluated, so have you been looking at all kinds of fish and whether they’re adult or juvenile fish?”*

R (DOE-RL): “We’ve looked at the risks in multiple ways. The aquatic criteria is based on the most sensitive life stages of the most sensitive organisms. As far as risks to salmon from Hexavalent Chromium, there were studies done 10-15 years ago by USGS and PNNL, looking at the most sensitive life stages. A series of toxicity tests were conducted and this information is available in the draft RI/FS as well as the Administrative Record.”

C: “There has been enough discussion and concern with this topic, that we should determine if we should pursue this as an issue manager team to see if we want to produce advice on this topic. Taking into mind on

how they balance their concerns and I believe it would be worthwhile for some of us to sit down and talk about potential advice.”

C: “I really appreciate what we have heard today and I have tremendous respect for Dr. Jim Hanson with DOE and Laura Buelow with EPA. We are very fortunate at Hanford to get these Chromium plumes dug up. There isn’t a lot of support for that at DOE Headquarters (HQ) right now. HQ’s thinks they wasted a lot of funds for cleaning up along the river at Hanford beyond what was necessary. If we don’t have risks to people or the environment in a reasonable manner, then we need to accept the cleanup that has been done. I want to bring to your attention, the political reality of taking an aggressive approach to ask for more cleanup in this area. When this administration, including the previous administration, thought that they done more cleanup along the river than is warranted and the CERCLA balancing criteria seemed to be indicated that this is reasonable. I certainly respect the Yakama Nation for expressed their views, but for the HAB, we barely got our appointments this year. So, I don’t really want to poke a finger in the eye for something were not going to get. There is not enough money. I want the 324 Building and the Cesium capsule storage done. I don’t think we’re going to get anything better and if we ask for better than we are getting, we put ourselves at risk for being reappointed next year.”

*Q: “What’s the timeframe for public involvement once the proposed plan comes out?”*

R (DOE-RL): “We have tentative date for a public comment period on the proposed plan in September 2018. This is tentative, as we have to go through two legal teams.”

**Next steps:** The issue manager team, comprised of Helen Wheatley (Lead), Dale Engstrom, Jean Vanni, and Jan Catrell will move forward with producing advice to bring forward to the June 2018 HAB meeting.

### **300-296 Remote Soil Excavation Project**

#### *Agency Presentation*

Dale Engstrom introduced the topic of the 300-296 Remote Soil Excavation Project and Mark French. Mark French, who is with DOE-RL, provided members an update on the 300 area remote soil excavation project.

Key points from Mark’s presentation:

- The 324 Building project is part of the Tri-Party Agreement (TPA) Milestone M-016-085A, which is to complete the remote excavation of the 300-296 waste site beneath B-Cell (Hot Cell) in support of future disposition of the 324 Building and further remedial actions of the 300-296 waste site.
- The 324 Mockup Building is currently under construction. The mockup building will be used to conduct surveillance and maintenance, as well as supporting the building prerequisites and activities for the remote soil excavation under B-Cell.
- For the 300-296 soil removal project, the team is currently working on the designing, testing, procuring, and constructing preparation in order to be ready for the work to start.
- On slide four of the [presentation](#) shows a diagram of the Cells in 324 Building. B-Cell is the larger cell of the four cells (A, B, C, and D), which is located in front of the airlock. Cells C and D are

located on one side of the airlock and A-Cell is located on the opposite side of the airlock as C and D Cell.

- The work scope is to remotely excavate the soil with the facility intact and functional. When the contamination was found under B-Cell, it was determined that the systems had not been deactivated and the crew was very close to removing the ventilation system, which was contaminated. B-Cell is actively ventilated. All of the other Cells and the airlock have an active hepafiltration system, which will allow work to be done in the contaminated ventilation system.
- The scope of this project is to excavate the soil 6 to 8 feet below B-Cell. Surveys and modeling indicate high radiation soils for the first 6 feet. The contamination that leaked in the Hot Cell, leaked around the expansion joint underneath the Cell itself. There have been probes conducted to determine the dose rate. The higher-level contaminated soils will be placed in bins and stored in A, C and D cells. The lower-level contaminated soils will be placed into containers and taken to Environmental Restoration Disposal Facility (ERDF) for disposal. A, C, and D cells will be grouted into separate monoliths.
- A Remote Excavator Arm (REA) will be installed on the interior wall of B-Cell. There will be an Upper REA and a Lower REA installed. A transfer mechanism will be installed in order to move the various equipment into B-Cell. Various tools are installed on the interior wall, as the floor of B-Cell will be removed. A floor saw will be installed into B-Cell in order cut up the floor and remove debris easier. The saw will score the floor in two-foot grids before excavation begins. The REA's will break up the floor and transport the waste into bins. The bins will then be transported from B-Cell into the airlock on the transfer mechanism. The higher-level contaminated waste will be stored in A, C, and D cells. The lower-level contaminated waste will be put into a shielded transport container and shipped to ERDF. The containers stored in A, C, and D Cell will be grouted in layers as the rows are stacked. Once the contaminated soil has been removed, the floor will be reinforced.
- There are three different parts to the project, which are proof of concept/risk mitigation, 324 prerequisites, and B-Cell activities. The proof of concept/risk mitigation is the component testing such and the floor saw and the remote operating impact device/seal breaker. The 324 prerequisites are currently underway with airlock and A, C, and D Cell cleanout. The B-Cell activities are in planning and design phase.
- The mockup building is next to the Areva facility (on Areva property) on Horn Rapids Road in Richland, WA. The mockup building is a full-scale replica of B-Cell and the airlock. Crews have installed the Master Slave Manipulators (MSMs), cameras, and light mounting brackets.
- The airlock cleanout was the first entry in over 15 years. There have been over 40 entries made into the airlock since April 10, 2017. On December 7, 2017, a crew member entered C-Cell for the first time in over 15 years with over 10 entries since then.
- This project has presented some challenges, as this is the first kind of a remote excavation of soil from within a hot cell that has extremely high contamination and radiation levels. The 324 Building is an older facility, which was built in 1960s with aging equipment, systems and infrastructure.

- With many of the challenges, the goal is to start 324 Building project execution in summer of 2019.

***Committee Member Questions (Q), Responses (R), and Comments (C):***

*Note: This section reflects individual questions, comments, and agency responses.*

*Q: “Why is the waste going to ERDF?”*

R: “It meets the ERDF waste acceptance criteria for low-level waste.”

*Q: “How do you separate the waste that goes to ERDF from the waste that stays in the Cells?”*

R: “When we start to dig up the soil, we know that the higher-level soils are around the expansion joint. The soil in the middle, we know is lower-level contamination.”

*Q: “What were the three big pipes that went into the concrete wall in B-Cell?”*

R: “The pipes support the REA’s since they will be mounted on the wall of B-Cell.”

*Q: “Once remediation action happens, sometimes while working on these things, the contamination starts to move as it becomes exposed. I am wondering if you are going to watch the soil as you excavate and look for things moving as you pull them out. Is there some anticipation of monitoring the stuff from escaping?”*

R: “Water used during decontamination is captured and drains into a tank and stays in the building. Water is used to keep dust levels down. We are very sensitive to not adding a lot of water that could drive the contamination further down into the soil.”

*Q: “Will there be extra monitor wells installed around the building?”*

R: “I believe groundwater is looking into installing one at the degradation.”

*Q: “Do you have extra air monitoring on the stacks?”*

R: “Yes, we have extra air monitoring. One thing to keep in mind is that the work that is being done now in this building is less of a hazard than what the building was doing before.”

*Q: “Is all the equipment you are using, commercial equipment and readily available?”*

R: “No, there is not company that has the specific equipment we need readily available. We’re using a John Deer REA and it will need to be modified and hardened. Anything you put into these fields will start to decay. Even the cameras that are rad-hardened has a shelf life.”

*Q: “For the manipulators and other things, will there be spares for easy change out in case one breaks down or decay faster than expected?”*

R: “Yes, that is correct.”

*Q: “What is the plan of the hot cells after they are grouted and stabilized? Can those go to ERDF?”*

R: “Yes. If its low-level waste, then it meets the ERDF acceptance criteria, it will go to ERDF.”

*Q: “Are you okay with funding. Are there any concerns with the budget?”*

R: “We have adequate funding right now, but as we all know that can change at any time.”

C: “I would suggest that the presentation have 324 in the title, so it’s easy to find. It would be helpful to have a slide on the contamination of concern on this project.”

R: “I agree with you. A lot of the visuals were used from previous presentations from a few years ago.”

*Q: “Looking at your last slide (slide 16), it shows a timeline of the 300-296 Waste Site Remediation schedule and the TPA milestone is expected to be missed by a couple of months. Will the TPA milestone date be changed?”*

R: “At some point we will need to change the TPA milestone date for this project.”

### **Waste Encapsulation Storage Facility: Cesium/Strontium Capsules**

#### *Agency Presentation*

Dale Engstrom introduced the topic of the Waste Encapsulation Storage Facility (WESF) Cesium and Strontium capsules, as well as Julie Reddick. Julie Reddick, Chemical Engineer with DOE-RL, provided members an update on the WESF capsules.

Key points from Julie’s presentation:

- Julie provided history and background of the Hanford Site. Hanford Site was established in 1943 to produce plutonium for national defense. The production of plutonium ended by 1989, but significant amounts of waste was created. The Hanford mission shifted its focus to environmental cleanup and waste management.
- The Resource Conservation and Recovery Act (RCRA) of 1976 is the regulatory statute related to WESF and the capsule storage area. The Dangerous Waste Regulations (WAC 173-303), under RCW 70.105.130 is an authorized Washington State implemented variation of the RCRA program. This ensures dangerous waste is management to protect human health and the environment, as well as, to regulate facilities that manage waste.
- Ecology issues the Hanford Facility RCRA Permit of the Dangerous Waste Portion for the Treatment Storage, and Disposal of Dangerous Waste, permit number WA7890008967 in 1994. The permit is currently under revision 8C, with provides standard and general facility conditions and unit-specific conditions for the operation, closure, and post-closure of operating unit groups.
- WESF was constructed in 1973 in the 200 East area of the Hanford Site. B plant was one of the original processing facilities at Hanford and was repurposed to extract Cesium and Strontium from tank waste/reprocessing solutions. The reprocessing solutions were eventually transferred to WESF. The materials were turned from a liquid phase to a solid phase and encapsulated. The encapsulation took place between 1973 and 1985. The capsules are double encapsulated and weigh about 25-30 pounds. There are 1,936 capsules stored in pool cells filled with water to protect

workers from the high levels of radioactivity. The facility itself is aging, but capsules are being stored safely with methods in place to keep the water cool and clean.

- DOE has proposed to transport the capsules out of WESF and store them into concrete casks. The concrete casks will be stored in a proposed capsule storage area. This ensures the support of DOE's cleanup goals of relocating the capsules into a dry storage configuration. The building of the storage area will require a permit from Ecology as a dangerous waste management unit, which is subject to the state dangerous waste regulations.
- Hot Cell G is still operating and will be used to move the capsules out of the pools for packaging into Protective Universal Capsule Sleeves. The Universal Capsule Sleeves can hold up to six capsules. Once the capsules are transitioned into the sleeves, they will be moved into transportable storage canisters contained within concrete casks. These will then be lifted by crane and moved to the truckport. Each cask can hold up to 132 capsules. The concrete casks will be transported from the truckport to the proposed dry storage area.
- The capsule storage casks will be designed with adequate air flow within the casks so the capsules are kept cool. The cool air will be drawn into the cask while the warm air goes out without the assistance of fans or mechanical equipment.
- The plan for storing the capsules in the proposed dry storage area is an interim plan until a final disposition plan has been made for the capsules. The proposed dry storage area is fairly close to the WESF facility. The proposed dry storage area consists of a reinforced concrete pad with two chain-link fences.
- DOE-RL submitted the permit modification request to Ecology, as well as hosted a public meeting. A 60-day comment period has been completed with written comments due to Ecology. There will be a 45-day comment period to follow.

#### *Agency Perspective*

Stephanie Schleif, Washington State Department of Ecology (Ecology) provided her perspective on the WESF capsule project. Ecology received a Class 3 Permit Modification for both the WESF facility upgrade and to move the capsules from wet to dry storage. Ecology also received a separate modification for the proposed dry storage area. The comment periods for these permit modifications ended January 31, 2018. Ecology has issued a letter of incompleteness for the WESF Class 3 Permit Modification. Ecology is working on the completeness review for the dry storage area.

#### ***Committee Member Questions (Q), Responses (R), and Comments (C):***

*Note: This section reflects individual questions, comments, and agency responses.*

*Q: "Are you going to build a new capsule storage area?"*

*R: "Yes. The new capsule storage area will consist of concrete pad and the fences around it with somewhere between 17 to 20 casks with the capsules inside the sleeves."*

*Q: "Why did you put the capsules outside the canister storage area?"*

R: "There are security issues with the fences and keeping things separate. There is a plan for monitoring both the canister storage area and capsule storage area."

*Q: "I have read in past documents that the currie amount was somewhere around 189 million curries, so I am wondering what the amount is today and if it keeps going down?"*

R: "It keeps changing, so as of June 1, 2017 there are a little less than 100 million curries today."

*Q: "How long will there be thermal issues be a problem with these capsules?"*

R: "We need to make sure that they are designed properly and make sure it's not plugged up, etc. The monitoring will give us an indication of the air flow so the crews can respond appropriately. The system is designed for day one and every day after that is better."

*Q: "Is there a point where you don't have to monitor anymore if there aren't any thermal issues?"*

R: "I believe we will always be monitoring it until we have a disposal decision."

*Q: "Why was the decision made to store the capsules outside in dry storage opposed to the current storage type?"*

R: "Since the 1990s, there have been a series of alternative evaluations and tests done. It was determined that design wise this works. When it came down to the evaluation and cost of the risks, the dry storage is the best."

*Q: "Is there a document safety analysis (DSA) associated with these?"*

R: "There will be two. There is an existing DSA for WESF and it will be updated to the changes that will be made to the facility and the new activities. There will be a brand new DSA for the proposed capsule storage area and there will be a transportation document for the transporting the casks."

*Q: "How robust are these containers are. For example, a direct hit by airplane kind of scenario?"*

R: "I think those kinds of scenarios have to be analyzed."

*Q: "What will compel the decision for the final disposition?"*

R: "We have a new interim milestone that we will evaluate for final disposition every 7 years. This is a TPA milestone with Ecology to ensure this is not forgotten."

*Q: "When are we scheduled to have the capsules in dry storage?"*

R: "We are talking about having a critical decision package for the casks storage system by the end of this fiscal year. We're thinking it's going to be before 2024. Not promising a particular date but I have recommendations for management."

*Q: "What about funding? Is there funding available for this?"*

R: "There is a complication going on right now with the continual resolution, but we have funding. The funding will be in three parts."

*Q: “Can you please explain what a letter of incompleteness is?”*

R (Ecology): “Basically within 60 days Ecology should review a permit application. Under our requirements there’s is a long list of items that need to be included at a very high level. WESF is not currently in our permit. We went through a did a review and found that a few items were not addressed, so a letter to DOE-RL basically states that the items need to be addressed.”

*Q: “Are there any plans to use the building for something else after the capsules are removed?”*

R: I don’t know if there are any other plans for the building after the capsules are removed, other than the deactivation.

*Q: “Is the water in the storage pool contaminated?”*

R: “The water is not contaminated.”

### **Plutonium Finishing Plant Update**

Dale Engstrom introduced the topic of Plutonium Finishing Plant (PFP) Update and Tom Teynor. Tom Teynor, Federal Project Director for PFP Closure Division provided members an update on PFP.

Key points from Tom’s presentation:

- On January 9, 2018, DOE-RL received a joint letter from Ecology and EPA requesting assurance that remaining risk would be addressed. DOE-RL received another letter from DOH on January 30, 2018 expressing their concerns with the incidents at PFP.
- Tom Teynor referred to the [Hanford website](#) for all the latest PFP updates. DOE-RL has convened an expert panel similar to what was done with the PUREX. There will be a webinar, which DOE-RL is providing information to the expert panel. There will be a sounding board based on what the contractor proposes. Jacobs Engineering, the contractor has convened an independent panel for to review the causal analysis and corrective actions.
- Tom stated that DOE-RL does take this incident very seriously. The information listed on the Hanford website goes back to December and is updated on a routinely basis. On February 4, 2018 there were high winds, so DOE-RL and CHPRC restricted access to the expanded work control area to conduct precautionary radiological surveys. DOE-RL implemented precautionary radiological survey after the December 2017 contamination event. Since that time, there have been five high wind events. Crews spray fixative every three days to contain any contamination if any.
- Bioassays requested to date is 273 with 159 negative. There was one home survey completed today with no contamination found. Any employee working on the site and would like to have a bioassay or home survey, is welcomed.
- The [PFP Access Control Boundary](#) is a work authorization boundary. If anyone wants to get within boundary for work, they will need to get authorization from the shift manager before entering the boundary.

- DOH has four air monitors stationed around PFP. DOH has installed an environmental air monitor at rattlesnake barricade, which will be continuously running. One of the biggest concerns for DOH is that the contamination does not spread to the public. DOH has taken four samples from the rattlesnake barricade since June 2017 with no contamination.
- There was plutonium found at the 100-K area, which is 9-10 miles away from PFP. DOE-RL is taking this very seriously, as we know that plutonium in man-made and came from Hanford.
- The contractor is reestablishing new boundary lines. The trailer village that was located near PFP is being moved to a different location as a precautionary measure. The situation at PFP is stable with monitoring being conducted twice daily. The continuous air monitors are running 24/7.
- The 291z fan house was filled in with soil, but overtime it subsided. The subsidence has stopped and has been filled with clean soil. In August 2016, the Z-1 crypt partially collapsed and was backfilled with clean soil.

#### *Agency Perspective*

Stephanie Schleif, Ecology provided her perspective regarding PFP. Stephanie stated that Ecology and EPA issued a joint letter requesting assurance from DOE that the remaining risks are adequately addressed in the corrective actions they institute before demolition starts back up. Ecology also requested some information due by January 26, 2018. DOE-RL provided the initial round of information. The items Ecology has not received are the corrective actions, causal analysis, and some of the bioassay results. Ecology, EPA, and DOH are observing the expert panel that was convened by DOE-RL.

John Martell, DOH provided his perspective on PFP and the letter sent to DOE-RL from DOH. DOH issued a letter on January 30, 2018 expressing some of the concerns that DOH has regarding the project. The DOH does not have direct sign off authority on some of the review, we do support Ecology and EPA in those endeavors. We have requested some information in our letter to DOE-RL, which some is duplicate to what Ecology and EPA requested. The requested information is due to us by March 9, 2018.

#### ***Committee Member Questions (Q), Responses (R), and Comments (C):***

*Note: This section reflects individual questions, comments, and agency responses.*

*Q: "Is the causal analysis the same as root cause analysis? How long does it take for bioassay results to come back?"*

*R: "Yes, the causal analysis is the same as the root cause analysis, as one leads to the other. We hope to receive all of the bioassay results by mid-March. The bioassays go through two screenings. If negative, then it's done. If it's not negative, then its reprocessed. The contractor is putting together a training and pamphlet on what bioassays are."*

*Q: "When contamination was found near the rattlesnake barricade it was thought to have come from PFP at one point. Is PFP the source of this contamination or is there another source somewhere else?"*

*R: "What you are referring to is the June 9<sup>th</sup> event. This event has us scratching our heads because we don't know where it came from."*

*Q: "Are you putting more air monitors out there close to DOH air monitors?"*

R: "Yes. DOH are putting air monitors near ours."

*Q: "There is a 2003 report that we put on our website (Hanford Challenge) from Battelle that talked about the high fired oxides used at PFP and the health impact because they stay in your lungs longer. Has DOE performed an analysis to see if any of these particles were high oxide?"*

R: "We did send a sample of the air filter paper from the December event to PNNL. Its currently undergoing an electric microscope review which will tell us if its high fired oxide. Operationally, if you saw on the Q&A section that we have on the website, this is one of the things we briefing talk about. Also, there will be a new white paper produced that Tom Bradfold is developing for us. It talks about where the high oxide was produced in the plant and what the biological effects could be. In the PRF the only place that plutonium high oxide came in was the MT glove boxes, which was removed in whole in October 2016. They had the room covered entirely in plastic and applied fixative while removing the glove boxes."

*Q: "Are you going to measure to see if high oxide is there?"*

R: "That's one of the things we are looking at is to determine the chemical compositions. Based on where we in the demolition process it's a lower probability."

*Q: "Have you been measuring for Beryllium or asbestos?"*

R: "When we did deactivation that was one of the things we took out was asbestos. We took out 38 linear feet of asbestos. In regards to Beryllium, that were certain areas that were it was known to be, which we had Beryllium packages that went along with radiological packages, so it was a concern."

*C: "I understand that there was worker who had a vehicle tested but did not want to take it back, so it was retested with contamination found."*

R: "Yes, that is correct and it happen two weeks ago. When they initially survey it, they found the contamination in the seal of the sunroof, but when they took it back and resurveyed it, they found contamination around the front license plate. The company offered the other 6 vehicles to be resurveyed. One was a rental. Three declined the resurveys."

*Q: "How do you prevent this from happening over and over again?"*

R: "There are some things that we now know we did wrong. The air dispersion model was accurate but did not adhere to the assumptions in the air dispersion model. We did not keep the debris piles down in conjunction with the demolition. Several things have been done to improve our work practices. The Radcon program, the contractor, and DOE is under an extensive review. We don't know the exact source of contamination from PRF. We are reducing the debris pile and slowing down the process. DOE has resumption authority."

*Q: "The survey plans that they are using to survey these vehicles, I am wondering how they were able to survey the vehicles for areas that are hard to reach?"*

R: "I will find that out for you."

## **Committee Business**

### *Committee Leadership Nominations*

Jan Catrell was nominated for Chair of the RAP committee. Dale Engstrom was nominated as Vice Chair of the RAP committee. Both nominees agreed to serve another term as leadership for the RAP committee. The leadership selections were approved by consensus.

### *3-Month Work Plan*

Dale Engstrom asked members to consider important topics for the FY19 HAB work plan.

### *Other items*

RAP FY2020 Budget Priorities:

- Sludge off the river
- 324 building cleanup
- WESF & Cesium Capsules
- Completion of PFP Demolition & Site Remediation (including soil/slab characterization)
- Apatite Barrier Completion
- Site Infrastructure
- Would like a briefing on DOE site priorities
- 200 PW 1, 3, and 6 Remediation
- Protect funding that keeps pump and treat running.

## **Open Forum**

Dale Engstrom introduced the topic of open forum. Dale explained to RAP members that the idea behind the open forums is that it provides an opportunity for committee members to bring topics for discussion that may not be on the agenda.

Members took the opportunity to discuss and list different items of importance during this time.

- PRA injection in Vadose Zone
- Site Wide Permit tutorial (maybe a June board meeting topic)
- Road map of what is near completion. What is getting finished up and getting into a whole new realm.

**Attachments**

**Attachment 1:** 100-BC Area Proposed Plan Overview

**Attachment 2:** 300-296 Remote Soil Excavation Project

**Attachment 3:** Waste Encapsulation Storage Facility: Cesium/Strontium Capsules

**Attendees**

**Board Members and Alternates:**

Dale Engstrom	Jan Catrell	Susan Leckband
Gene Van Liew	Tom Carpenter	Alex Nazerali
Bob Suyama	Helen Wheatley	Rebecca Holland
Pam Larsen	Jean Vanni	Ken Niles (Phone)
Liz Mattson (Phone)		

**Others:**

Mark Heeter, DOE-RL	Dana Cowley, MSA	Steve Balone, DOE-RL
Ginger Wireman, Ecology	Jim Hansen, DOE-RL	Tom Rogers, WDOH
Jason Copson, CHPRC	Katie Mahony, DOE-RL	Jennifer Copeland, CHPRC
Alicia Boyd, Ecology	Laura Buelow, EPA	John Martell, WDOH
Kim Welsch, Ecology	Tom Teynor, DOE-RL	Stephanie Schleif, Ecology
Theresa Howell	Jeff Lerch, CHPRC	Kyle Rankin, DOE-RL
Mike Jennings, CHPRC	Connie Krull, CHPRC	Mark French, DOE-RL
Lindsay Strasser, ProSidian	Melissa Amaro, ProSidian	