U. S. DEPARTMENT OF ENERGY PUBLIC MEETING
PROPOSED CLEANUP ACTIONS FOR REMEDIATION OF HANFORD'S 100-F/IU PROPOSED PLAN
(along the Columbia River)

HELD ON
WEDNESDAY, JULY 23, 2014
6:30 P.M.

BEST WESTERN HOTEL -- GORGE ROOM
1108 EAST MARINA DRIVE
HOOD RIVER, OREGON 97031

APPEARANCES

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U.S. DEPARTMENT OF ENERGY:

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APPEARANCES CONTINUED

MEMBERS OF THE PUBILIC:

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Robbie Lapp

Jurgen Hess

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U. S. DEPARTMENT OF ENERGY PUBLIC MEETING

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6:30 P.M.

MR. BOHRMANN: Okay, let's go ahead and get started, then. My name is Dieter Bohrmann. I work for the Washington Department of Ecology. I will be your facilitator tonight.

We are here to discuss the proposed plan for the 100-F area of Hanford, and that's one of the reactor areas along the river.

Just wanted to go through the agenda real quick, and outline kind of the process for the night's meeting.

We're going to start with a presentation from Jim Hansen from the U.S. Department of Energy. He's going to go over some slides about this decision and the proposed plan.

Next up will be a perspective from Columbia Riverkeeper. Lauren couldn't make it tonight, I guess, so that will be done by two other representatives from -- from Riverkeeper, Dan and Abigail.

And after their presentation, we will go to a question and answer session about the proposed

plan. And during this part of the meeting, you're welcome to ask any questions about this decision and we'll just have a conversation with -- with the agencies involved in the decision and -- and that's your opportunity to get some back-and-forth with -- with the agencies and get any clarification you might need or -- or questions you might have.

And at the end of the Q and A, we'll go to the formal comment period. And during that period of the meeting, you'll be able to come up and state your comment for the record. And during that time, there will be no dialog with the agency; it'll just be your individual comments that will be captured, so...

We do have a court reporter here. He is capturing a transcript of the entire meeting and within 10 days, two weeks of -- of the meeting, that transcript will be posted on the U. S. Department of Energy's website, Hanford.gov, so you can look for that then.

Also want to mention that we have a -- a webinar component of this meeting, so there are folks that can -- can log in on their computers or their other devices and listen in, watch the meeting remotely, and from time to time during the meeting,

we will be collecting comments from them and -- and asking those as well. So --

FEMALE: Will this be available for -- for viewing at another time?

MR. BOHRMANN: Will the -- the webinar? Will the Webinar be captured and be available? There -- there are no plans to do that, apparently. But we can provide copies about every presentation that's given here tonight. Those should be publicly available.

MALE: Sir, for those of us that can't stay until the public comment period, our comments on here will be logged. Correct?

MR. BOHRMANN: Yes, definitely. Thank you for -- for mentioning that. So on the back of your agenda, there is -- and you can do it on a notepad or anything. But for ease of commenting, there are -- the opportunity on the back of your agenda to write your comments down, turn those in, you know, whenever is convenient to you tonight or you can mail them later, or, you know, obviously, we're here to capture them.

So, yes, if you have to leave early or you just feel more comfortable doing it that way, that's an opportunity, too. So...

Anything I missed? We're going to try to -- try to stick really closely to the agenda. And, you know, this is your opportunity to ask questions, so you don't want to hear -- listen to us talk at you all night, so we're really going to stick closely to -- to what we have outlined here and give you plenty of time for your questions and -- and we'll address those to the best of our ability.

So why don't we get started. Any -- any other questions before we turn it over to Jim?

Okay.

100 F/IU PROPOSED PLAN PRESENTATION

U.S. DEPARTMENT OF ENERGY -- RICHLAND OPERATIONS

MR. HANSEN: All right. Welcome. I am Jim Hansen. I am with the Department of Energy, and I am the -- I guess I'm going by the CERCLA Advisor. And CERCLA is the -- the laws that we are working with to do these remedial decisions.

And so I wanted to start this off by saying that we -- about a year ago, we held a public meeting on the 300 area, this is another are of Hanford, and we learned a lot from that -- from that interaction. We learned that the -- the presentation that we did at that point in time was -- was very complicated, very technical.

We tried to pull that back. We tried to listen to -- to some of the concerns that came up at that -- at that time. And we also, through the public comment period, we learned a couple things, we were reminded of a couple things that actually changed the Record of Decision.

One of the things that we did not do a very good job at in preparation was -- was look at endangered species in the river. We filed that before the Record of Decision had looked at the

endangered species, what the potential effects there were on those, and we appropriated that in the document.

We also had some questions about the institutional controls that we were -- we're proposing for the 300 area, and we clarified that in the document.

So we -- we really do listen to the public. We will respond to -- in the 300 area, we did a summary response. We -- we looked at all the questions, there was a lot of similarities. We responded to the -- the types of questions, the same tones of questions and put them, a response of the summary, in the Record of Decision itself.

So, again, this is on the 100-F/IU. 100-F area is the reactor area. IU is the isolation units, which is some -- some areas in between the major areas of Hanford. And I'll show a map here in a second.

So I will go through the remediation progress to date, a summary of the proposed plan, and an anticipated schedule from this point forward.

So here is a -- a map of the Hanford site, and you can see that there's a -- there's an area around the major -- the major activity areas. To the north

is the Hanford Reach National Monument. Then there's some areas down here to the south. The Columbia River runs right along the north edge of the site. There's different reactor areas: 100-BC, 100-K, 100-N, 100-D/H, and those are all operable units decisions that we will be coming to the public in the coming years.

The 300 area is what we had worked on about a year ago, and that Record of Decision came out, I do believe around November.

So what is in the -- the yellow around the middle of the -- the site is the isolation units. That's the areas between the reactor areas and the central plateau, which is where all the processing occurred from the -- from the -- the uranium that was irradiated in the reactors.

So this is the area between the -- between the central plateau and the reactor areas. This is the isolation units. And there was some waste sites out there we -- we took -- we are taking care of.

100-F is this smaller location up here next to the river. And there was a reactor there and that was the main focus of the cleanup.

Here's some historic photograph and -- and a recent photograph of the 100-F. You can see back

in the day there was -- there was a lot of activity, a lot of buildings. It operated from 1945 to 1965. All these buildings have been removed.

The cleanup at 100-F proper has been -- has been completed under an interim action and, in the process of this -- this current proposed decision, we went through and checked the cleanup of that original action, the interim action, to determine if that was -- was sufficient to call a formal Record of Decision.

And you can see that all the buildings have been removed. There's been -- there's been backfill. There has been a revegetation.

So to start off, within the 100-F area itself, the proper remediation was completed under the interim action; interactions were re-evaluated in the proposed plan. There's about a two-square-mile area that was -- that was the -- the -- the main focus of the remedial action efforts in 100-F. We removed approximately 1.5 million tons of contaminated material. That action -- interim action was completed and revegetation was -- was completed in the winter of 2012.

This is a photograph of some of the remediation that was completed. This was one of the

-- the deeper digs that we did to chase after hexavalent chromium. And you see that we had excavated down to the groundwater level.

The isolation -- isolated unit areas, we removed approximately 500,000 tons of contaminated material and, to date, when the RoD is expected to be completed, we should have around nine sites left to go. The rest of the sites have already been remediated and, to date, everything has met the -- the objectives of the Record of Decision that we are proposing now.

Here's a different photograph, another area. You can see these are typically quite small areas. What's left is -- is small, relatively uncomplicated sites. There's a -- in this case there's -- I think those are, like, filters or oil cans.

The groundwater underneath this area is -- is one of the main concerns that we -- that remain. And there's -- there's three -- four different contaminants that are -- we call "contaminants of concern." And that is: hexavalent chromium -- or, it's identified here as chrom VI, strontium-90, trichloroethene or TCE, and nitrate.

And the different colors, you can see that

the -- there's a green outline in the better photograph in the back. There's a green outline that goes around this area. That is the -- the area that exceeds the drinking water standards presently. And this is about 2,600 acres. So exceeds the drinking water standard by a factor of about two or three.

The TCE, or trichloroethene, is in the purple, and that's about 242 acres. That material is -- is not very mobile.

And hexavalent chromium is this little area right about there, and that's about 16 acres -- or, no, 41 acres, 16 metric acres or hectares.

And the -- the strontium-90 is about 18 acres in the red.

Along the river -- we don't give the data here in the slide, but in the last three years, we've had one exceedance of -- of a required standard in the river, and that's been for strontium-90. It was a concentration of eight -- or nine picocuries per liter, and the standard -- picocuries standard is eight picocuries per liter. So the last three years, nothing else has exceeded standards in the river; and before that, we had just a very few exceedances for the previous five years.

So, for the most part, this material is relatively low concentrations. It does exceed standards. It does require an action and we have a basis for action.

So the critical alternatives that we are presenting in the proposed plan is a little bit different than what we did in the 300 area. In the 300 area, we did Alternative 1, 2, 3, and 4. Here we separated the soil cleanup alternatives and groundwater cleanup alternatives, so there's -- there's S alternatives and G alternatives.

For soil, we have two alternatives. One is no action. That's something that's identified in the -- in the laws, the federal laws. That's something that we looked at. It doesn't meet the -- the objectives, doesn't meet the requirements, and so that did not go any further.

Our other alternative was to remove, treat and dispose, and some institutional controls. So remove the components, remove contaminated soil and debris, treat to meet land disposal restrictions and dispose, or RTD. That's the standard action at Hanford and the river corridor.

We backfill, recontour and plant native vegetation. And that's been, like, sagebrush and

rabbit brush and some grasses, native grasses. We -- we've been trying to bring that back. And often those places actually look better than what's -- what has grown naturally there.

And then institutional controls to prevent exposure to residual contamination until those cleanup objectives are met. And that is the -- the first one is to prohibit irrigation at one site. If we were to irrigate at that one site, there was the potential for hexavalent chromium to reach the groundwater.

Remember, there's -- there's presently no irrigation in this area, but we do have a -- we are putting on an institutional control to prohibit irrigation at that location until such time as it meets standards.

Then at 15 sites, there is excavation restrictions. There is some deep radionuclide -- so it's strontium and cesium, primarily -- that is below 15 feet. The state requirements were down -- that we clean up down to 15 feet for direct contact. Below 15 feet, there's no requirement to remove it.

We wanted to put an institutional control to make sure that we marked those locations, watch those locations over time. And most of these

locations will decay within -- within a relatively short amount of time. Some of them will take several decades. But it's below 15 feet.

The time frame to complete this action right here is three to five years. We'll probably be done sooner than that. And this action is an end price, $21 million.

For groundwater, we have four alternatives. One was no action. It was identified as a requirement. We -- that was not considered any further because it did not meet the basic requirements.

The preferred alternative is -- is Groundwater 2, which is a monitored natural attenuation and institutional controls. I'll identify some of the mechanisms of attenuation that we looked at in the next slide. But we were able to show that -- that natural attenuation was an effective mechanism to reduce the contamination in place. Institutional controls to prevent exposure; monitoring or adding wells. And the action; to monitor it to make sure that it performs as -- as we anticipate.

The time frame; 35 years for hexavalent chromium, 150 years for strontium-90, 80 years for

nitrate, and 50 years for trichloroethene. The cost is about $36 million.

The two other alternatives we looked at, Groundwater 3 is a pump-and-treat alternative with in-situ treatment, meaning we're adding -- at certain locations we're adding a substrate -- in this case, there was ethanol -- to enhance the biologic activities; to reduce the oxygen in the -- in the groundwater, which converts some of the material like nitrate to a less-toxic form and hexavalent chromium to a less-toxic form.

If you look at that alternative, the performance was better for -- for hexavalent chromium, very similar for -- for strontium-90 and nitrate, and a little bit faster for TCE. The cost of that is $177 million.

Groundwater 4 is a more extensive pump and treat without the addition of the substrate. And the -- the performance was -- was very similar. A little bit better for nitrate, but very similar in the other respects.

So I'll very briefly go through these with -- with a little more discussion. The nitrate plume as shown on the map of the different types of concentration rates, the darker is the high

concentrations, you can see that -- that the nitrate has spread to the south. This is kind of the direction of the groundwater flow with respect to the river.

The -- there's other -- the other plumes from the original map I showed are still outlined here. The attenuation mechanism that we were able to show --

MALE: I'm sorry, I didn't know whether you wanted questions at the end or do we interrupt?

MR. HANSEN: At the end would be better, and I'll try to break.

MALE: How about just trying to fix the display so it's a little more in focus. Like the legend, for example, it looks like it's up here. If we can turn off some lights and make it a little more visible...

MR. HANSEN: So the attenuation mechanisms that we were able to show and that are occurring in the groundwater; we do have radioactive decay for strontium-90, and that -- that -- strontium-90 decays at the standard rate of -- of approximately every -- a half-life every 30 years.

Typical stabilization. Absorption of -- of the chemicals to -- to soil particles, sediment

particles. If some of the -- the chemicals don't move very fast through the soil.

And the biodegradation. There's -- there's areas where there's biological activity, and that causes some of these chemicals, such as hexavalent chromium and nitrate, to convert to less-toxic forms.

Alternative 3. We have the -- the pump-and-treat system in this -- this northern section. We have the -- the substrate addition along this -- this western side, and that would cause degradation through the center zone.

And then Alternative 4, more extensive pump-and-treat network throughout the entire nitrate area.

So the preferred alternatives were Alternative S-2, which was -- was found to protect the environment, complies with the applicable requirements. It's cost-effective and it's readily amenable. This was the only alternative that we evaluated. It's -- a standard approach at Hanford is to do RTD.

And the preferred alternative we had for groundwater is Alternative 2, which is about protecting the health of the environment. Since the

soil -- excuse me. Since the soil resources have been remediated, there is no further source into the groundwater. The plumes are decreasing in concentration. We have shown that there is effective natural attenuation. And there's -- there is no -- the concentrations in the river currently do not exceed standards. And monitoring wells are in place. We are going to add additional monitoring wells. And it's readily amenable with significantly lower cost.

So the schedule from this point forward; we are currently in the public comment period. That is scheduled to end on August 11th, and we -- it started on June 9th. After we finish the public comment period, we will prepare a Record of Decision. It is an EPA Record of Decision. We'll be assisting the EPA wherever they need. We plan on issuing the Record of Decision sometime in September, barring identification of a significant issue.

And then after the Record of Decision is issued, we go into a remedial design, a remedial action work plan. That's the design phase. A PowerPoint to implement this, where we're going to put the wells, those sorts of things, and

implementation of the Record of Decision in 2015 and 2016.

And with that, I am finished. Thank you.

MR. BOHRMANN: Okay. Thank you, Tim.

Dan, do you want to come up and get started?

Yeah. If you could hold one minute -- do you have a question about what the -- the presentation that was just given?

Okay. We're going to let Columbia Riverkeeper give their perspective real quick, and then we'll go into a full Q and A.

LOCAL PERSPECTIVE

DAN SERRES, COLUMBIA RIVERKEEPER

ABIGAL CERMAK, COLUMBIA RIVERKEEPER

MR. SERRES: Can you hear me? All right.

Hi. My name is Dan Serres. I'm the Conservation Director with Columbia Riverkeeper. And thank you all for coming out tonight. I just really appreciate the fact that on a warm, sunny day, when there's an oil train hearing going on right across the river in White Salmon, that some people are here to devote their time and energy to dealing with the Hanford cleanup.

MALE: I couldn't get into the oil train hearing; it was too crowded.

MR. SERRES: Say what?

MALE: It was too crowded. I had to come over here.

MR. SERRES: My child's across the river in White Salmon.

So, a couple things that we wanted to do just to tee this off, first of all, was to -- to state that, you know, this kind of area decision is the first main plutonium reactor that will go through a final decision on a river corridor. So

this is the first time that we'll say, okay, this reactor area is cleaned up or not. It's very, very important that we weigh in now. And -- and so I think it's -- it's critical for all of you to be here and to weigh in by August 11th.

The second big piece that I wanted to point out is that the Hanford Advisory Board has issued very, very strong, clear advice on how the Department of Energy should approach the cleanup of the F area.

Because it's so critical, because the Hanford Reach is not only drinking water in the Tri-Cities, it's also the best main stem spawning habitat for Chinook salmon in the entire Columbia River, this is an area where Columbia Riverkeeper agrees with the HAB and we feel like it's really critical to -- to get a thorough cleanup.

One of the confusing parts about this proposal is it encompasses -- yes?

MALE: Really sorry to interrupt you. Could we borrow your thumb drive to get -- so the people on the webinar can view this at the same time?

MR. SERRES: I'm going to keep going just -- just so -- folks on the webinar, I hope you can

clue into this in a little bit.

So I want to get down to what the Hanford Advisory Board has really pointed to in terms of this decision because it's really, really critical.

So the Hanford Advisory Board is made up of groups like Riverkeeper, groups like Heart of America Northwest, groups like the Yakama Nation, the state of Oregon, the Oregon Department of Energy. It's a wide-ranging, very diverse group, and that group came together and gave consensus advice that hit a few big points.

The first is that 150 years of monitored natural attenuation is an unacceptable time frame for cleanup in the F area.

The second point is that institutional controls over a -- what -- over a time frame like 150 years is also unacceptable. It's -- institutional controls means we put up a sign, we put up a fence, we say: Don't drop a well here. Don't drink the water. Don't fish in this area. It's hard to imagine over a 150-year time frame that that would be reasonable.

The third big step that HAB pointed out was there are more proactive solutions to dealing with the main driver for this very long time frame,

which is strontium-90. In the N area, the Department of Energy has deployed a permeable reactive barrier, which is basically a mineral wall that intercepts strontium and binds it up in the soil before it flows into the Columbia River.

DOE didn't even look at this option. We're not -- we're not saying that this is the best option that's out there, but DOE didn't even consider this as part of its proposed plan. So again, that's a huge failing of this proposed plan.

And ultimately, we think that, you know, this being the first main decision on the river corridor, we can do better than this, and we have to.

With that, I want to introduce Abigail Cermak, who is our new Hanford coordinator, who's going to point out some of the more specific issues in this plan.

MS. CERMAK: Thank you, Dan.

So I'm going to try to keep this real short so we can move on to questions.

I'm going to touch on a little bit more of what Dan mentioned as well as point out some things that Columbia Riverkeeper has of this plan.

One is how we're defining a reasonable

time frame. I think it's a little misleading of Energy to say that the soil remediation and the S-2 alternative will be three to five years and that even those institutional controls will be a few decades.

If you notice on this that I took right out of their report, there is an area -- 118-F:83 -- that says it will have institutional controls for 264 years and also irrigation will be prohibited indefinitely. And to me, that is not a sign of a reasonable time frame.

Not to mention the groundwater remediation plan at 150 years, or even 80 years, for natural attenuation doesn't seem like a very reasonable time frame when there are other alternatives that can take care of these plumes much faster.

And now I want to speak to why a monitored natural attenuation, or basically the wait-and-see approach, is not the best alternative. I took this information straight from guidance documents for natural attenuation, which says it's not the best sort of alternative for metals and radionuclides since they do not react the same under natural attenuation as do organics or inorganic chemicals.

Proof of that is that radionuclides like

the strontium-90 are based on half-lives for the wait-and-see approach, and they do not react the same -- no, excuse me, they're considered too slow for a reasonable remedial time frame under natural attenuation.

Furthermore, if there is co-contamination in groundwater, it can compromise natural attenuation. If you look on the slide, you can see that several of these groundwater plumes and chemicals are mixing together. That would be co-contamination.

And, furthermore, natural attenuation should not be used if there's a possibility of migration. And I think Energy mentioned that these plumes are moving to the south; that would indicate migration.

And this is another snapshot of the cleanup plan that I took that lists the alternatives for groundwater. And I just want to point out, at quick glance, you can see that the last alternative is the best alternative, regardless of cost.

And one of the things that I think is really glaring is that the chosen alternative is Groundwater 2 -- I'm just going to jump up here real quick -- long-term effectiveness is rated as

performing well against the criteria with no apparent disadvantages or uncertainty. But then here, the reduction of toxicity, it said expected to perform less well. These two don't seem to match up, but they're very interconnected.

And I do want to mention regarding cost, you know, there's going to be increased costs due to uncertainties if we rely on natural attenuation. So it's just going to cost more to clean this up later if their preferred alternative does not work.

And finally, I just want to mention that a weak cleanup plan like this kind of sets precedence for how other cleanup plans will be drafted and implemented for other areas in Hanford. So that's just something to keep in mind.

So in closing, I would like to ask our regulatory agencies, EPA, the Department of Ecology, to really hold Energy accountable for their agreement to the public and to advocate for a more aggressive cleanup plan because why are we, you know, playing with one of our most prized natural resources in our region?

Thank you.

MR. BOHRMANN: Okay. Thank you, Abigail. Thank you, Dan.

QUESTION AND ANSWER SESSION

MR. BOHRMANN: Okay. We're going to open the floor here to -- to your questions and, oh, I'll take hands as best I can.

We'll go in order and -- and if you could come up and use the microphone, I'd appreciate it. There's two up here for the -- so we can make sure to capture it on the transcript.

I also want to make sure to introduce Chris Guzzetti. He's with the Environmental Protection Agency, and the EPA is the lead regulatory agency on this decision.

MR. GUZZETTI: I was just going to introduce myself. That's all.

MR. BOHRMANN: So Chris with EPA and -- and Jim, again, with U.S. Department of Energy on this obviously important decision of the Hanford river shore.

So why don't we start with this gentleman here. I saw his hand get up first, and...

If you would state your name before your -- before your question, we'd appreciate that for the transcript.

MR. WOOD: My name is John Wood, and I just noticed that you'd mentioned one-and-a-half

million tons of contaminated soil, and after that you mentioned another half a million.

And where do you put it? I mean, if you're just shelving it, you know, they're still going to be on Hanford Reservation, and it might be that this area is cleaned up, but what happens to the dumping ground?

MR. HANSEN: The materials removed was -- was transferred to the -- there's a central burial ground called ERDF and ERDF stands for Environmental Remediation, Restoration and Disposal Facility. Something like that.

Okay. It -- it is a location in the central plateau that is a -- a conforming burial ground, and there's -- there's treatment -- or there's not treatment, there's -- there's infiltration water catch underneath it.

John, did you want to add to that?

MR. NEATH: I'm John Neath and I'm with DOE as well.

Yeah, the ERDF that's been operating since back in the first days when we first started remediating back in the '90s, it's grown very large. It is centralizing of the waste depository, but it is a double-lined facility. It's got -- it's got

the natural wells up and down the gradient of it, and as it was mentioned, the leachate is collected from those -- between the liners to collect any contamination that might be taken out.

A lot of the soils come in and have had dust suppression put on them, so there's some water that needs to be taken off, and that's taken off and treated.

So this lined facility is -- is put in the central part of the Hanford area, which is very high above groundwater, so there's quite a lot of distance between the groundwater and it's not expected to leak anyway, so.

MR. WOOD: Is there a roof on it or something for rain?

MR. NEATH: Yeah. Once -- once it's closed, there will be a -- a barrier placed over the top of it.

MR. BOHRMANN: Okay. Next question.

MR. HESS: I'm Jurgen Hess. I live in Hood River.

My question is why 150 years? Is 150 years based on including economics? If economics was not included, why couldn't strontium-90 be cleaned up in less than 150 years? Say, 50 years,

30 years, whatever.

MR. NEATH: The 150 years is really based on that half-life of strontium, the amount of strontium that is there. It'll take -- the half-life is 30 years, so it'll take that 150 years just for that material to decay.

Now, we did look at several different options, but -- for example, the MNA, which is watch it in place while it decays. If we had done something like the permeable reactive barrier, even if it got caught in the barrier, it still takes that 150 years to decay.

And if we did the -- tried the pump-and-treat alternative, which is Alternatives 3 and 4, it's not very easy to get that out of the -- because it tends to bind to the soil, we can't get the strontium out it, out of the groundwater very well.

Once we get it to the surface, we can treat it, but it still ends up taking that long until you're done because it keeps going back to just depending on the time frame for the decay of the radioactive materials.

Did that answer it?

MR. HESS: Yes, thank you.

To follow up on that, some of the

contaminated soil and water is being put in these glass walls through vitrification. Could that be done with this material?

MR. NEATH: Well, if we had -- it's, again, the problem of collecting that strontium where it is. Once we manage to get it out of the ground, there's several ways to treat it that would work fairly well, like ion exchange or something like that, and -- which, in fact, would probably be easier than something like trying to vitrify or anything like that.

MR. BOHRMANN: Okay, thank you. Next question.

MR. DEBRUIN: My name is Greg Debruin (phonetic). I guess I'm going to back up for a minute. Twenty-five years ago, we started on this road to get Hanford cleaned up, and we always knew we'd get to a point in time, as Dan has said, where the river shoreline, we're going to finally say we're done.

I've been gone for eight years doing other things in my life. Then I got a flyer from Columbia Riverkeeper and from Heart of America Northwest, and I looked at it and was kind of shocked that, one, anybody can step forward and propose an ending.

When Nick Ceto left the EPA, that was his little nest egg he left. There was MNA, monitored natural attenuation, which he said: Do nothing. Sit back and wait.

If you look at the responsibility that we have and you look at a timeline going forward, it's hard to imagine that somebody could honestly sit here and say MNA is our solution to get you to say: Okay, we're done. It's cleaned up.

If you're a tribal member, you couldn't agree to that. There's no way in heck. Nobody could. If you're a tribal member. So you take them and put them over there and say: We don't care.

If you're a citizen of the state of Washington and you're thinking of land use, you say: Wait a second. Eighty years from now, DOE is still going to be her monitoring the site. Fifty years from now, DOE is still going to be here monitoring the site.

And the population isn't going to grow. And nobody in their right mind would ever want to build a house, irrigate, grow crops, use 586 square miles, or the whole shoreline of the Columbia River in the future in 40 years. How can you come with that assumption? You can't.

How can you say that monitored natural attenuation is something that is acceptable not only to the people sitting here, but acceptable to all the future generations? You can't say that.

But then you go back to the law. And the law says if you have a technology that could remediate an existing problem, MNA is not appropriate or applicable. It's very clear.

So for me, I'm sitting here saying: No. You are trying to sell something that isn't based in science, fact, and, isn't the final solution that creates a remedy that solves the problem.

Now, if you look at what the problem is, according to the limited document that I have here because I haven't read the whole document because I haven't been doing this for a long time, it's, what, 300 pages? And really, what it boils down to, is a hundred and -- the cost is $171 million. That's what we're talking about, 198 million. Okay. $198 million -- 194 million. That's what it's -- you're talking about, $200 million, to create a usage that you might be able to use it, but you still couldn't irrigate. So you haven't solved the problem.

So how do you expect the tribes, let alone the taxpayers, let alone the people that live in the

northwest, let alone anybody that comes here in the future, to come back and look at you in the past and say: Oh, hey, that was a really good decision. We can't use any of this land.

So, I'm sorry. I'm actually really disappointed. I figured there would be something of value, something that you could actually come back and say: Here, we can justify this.

But then I ask the question; I want to see a full cost analysis for 150 years out, how much money you're going to spend when somebody challenges the decision, when somebody comes back and finds out that the plumes have moved. How much money is that? Where is the cost analysis for that? For the whole time that this hazardous material remains hazardous. 150 years. Where is it? Where is the cost analysis? How does it compare with the 194 million being spent in the next three, four, five years. Where is it? I don't see it. It's not there.

So I think the agencies have gone short and I think the policy being driven somewhere internally at DOE says, hey, we don't need to worry about this; let's do our homework and get this thing out, and let's make a decision.

It's an uphill battle. We aren't doing

the work right. And kind of a sad state of affairs, 25 years later coming back and saying we're going to leave the shoreline crapped up.

Oh, and the final thing is this one thing the DOE has consistently ignored -- consistently ignored -- is if you talk to the BPA, the Bonneville Power Administration, their lifetime for a dam on the Columbia River is 100 years. That's it. Their assumption is that in 100 years, the dams will have to be removed because of structural problems.

Everybody knows this at DOE because I've been talking about this for a long, long time. But yet, that's not in the analysis.

So your static analysis says that that shoreline is going to stay the same no matter what happens. Climatic change, no matter if a dam is taken out, no matter what happens, that's going to stay the same. So I would like to see the analysis that looks at what you did to predict in your modeling that shows that that river shoreline's never going to change; the river is not going to rise 50 feet, it's not going to rise 100 feet; and -- and that material's going to stay there for your predicted timeline.

And if you don't have that work, and if

you haven't done that work, then it needs to be done. If you haven't done that work, you shouldn't have come here and tried to present something that's like this.

So, those are my comments. Thank you very much.

MR. BOHRMANN: Thanks, Greg.

I guess, do you want to address that?

MALE: Is there a question? I didn't hear a question.

MR. BOHRMANN: Was there a specific question there, Greg, or just --

MR. DEBRUIN: There was a whole host of them, so they can pick any one. I gave a whole bunch of questions. There's a whole series of them, and you can pick any one you want: Where's the analysis; 150 years; the flood scenario; all these cost analyses, where are they?

MR. BOHRMANN: I don't want to put words in your mouth, but --

MR DEBRUIN: It's on tape, so -- you know what I mean? Do you want me to go slowly or --

MR BOHRMANN: No, Greg. One of the main things I heard was the question about monitored natural attenuation. Maybe --

MR DEBRUIN: There's justification for using monitored natural attenuation where you have existing technologies to remediate the problem. If you have existing technologies that can remediate the problem, MNA is not appropriate. If you go to the metal side of the equation, it's not appropriate. So how do you get there? How do you get to that decision where we are today, where you're taking the time of the public, the resources of the department, eventually the taxpayers, and laying that on the table and saying here's what we're proposing? How do you do that? I don't understand.

MR. NEATH: Well, to start off with, we did look at the remedial technologies; we are following the law. This is allowable.

MR. DEBRUIN: Say it again.

MR. NEATH: This is allowable under the law. We have evaluated it to determine that monitored natural attenuations is an allowable alternative. We have -- we have compared the alternatives to determine that -- that --

MR. DEBRUIN: Do you read -- do you read the guidance that are --

MR. NEATH: Of course I do.

MR. DEBRUIN: Have you read the guidance?

MR. NEATH: Of course I do.

MR. DEBRUIN: Read back the guidance -- in fact, the Columbia Riverkeeper just read a really good excerpt of that. But the other part they didn't say, if there's an applicable technology that remediated in a much faster timeline, MNA is not appropriate. Strontium-90 isn't appropriate when you have salmon reaching spawning grounds. Chromium is inappropriate when you have spawning grounds on here. So where -- where -- show me -- tell me about this -- this legal piece you're telling me right now.

MR. NEATH: Right -- well, we have an evaluation of monitoring with natural attenuation in the RIFS. It's a full evaluation. It shows that it is a viable alternative.

Secondly, Columbia Riverkeeper is not -- you're not exceeding water quality criteria in the river. We have measurements out in the water and the two are not exceeding water quality criteria.

MR. DEBRUIN: You're talking about drinking water.

MR. NEATH: No, no. Aquatic standards.

MR. DEBRUIN: You said chromium didn't

exceed --

MR. NEATH: We are not exceeding chromium standards in the river. Aquatic standards that protect aquatic organisms.

MR. DEBRUIN: Even though you got strontium-90 at nine picocuries per liter in the river, you're going to let that stand.

MR. NEATH: The drinking water standard is eight picocuries per liter. There is no aquatic standard for strontium-90. There's a risk-based calculation that we have calculated, the first -- the first level of ecological effect happens at 278 picocuries per liter for the protection of riparian mammals and birds. The aquatic -- for fish, it's much higher than that.

MR. DEBRUIN: So you're -- you're -- let me back up.

MALE: Seven.

MR. DEBRUIN: Chromium -- chromium --

MR. NEATH: There's no effect of the strontium-90 on the salmon RIFS from --

MR. DEBRUIN: Chromium?

MR. NEATH: Again, we don't have aquatic standards for chromium in the river in that -- under that.

MR. BOHRMANN: I just want to do a check here, make sure we get everybody's questions and comments. I know this conversation's probably to be continued, but is there anyone else who has a question, comment?

MR. POLLET: I'm Gerry Pollet. Sorry about the disturbance. I had two people call me who said they couldn't hear anything off the phone lines on the webinar.

MALE: Speak into the mic, Gerry. I can't hear you.

MR. POLLET: Oh. I'm not helping the situation either.

MALE: There you go.

MR. POLLET: I said I'm Gerry Pollet, and two people called and said they couldn't understand what was happening on the phone line for the webinar and we talked. But I apologize for that disturbance. We wanted to try to get -- make sure people could hear.

I have a couple of questions. I'll ask them one at a time to make it easier. And I'd appreciate if Riverkeeper, which gave an alternative viewpoint, has an answer also, to hear their response.

First off, just right off the bat, I'd like to know if you have evaluated, in terms of the total risk for the F area and cumulative risk for Columbia River, the pending change in fish consumption levels for Washington state, which, like Oregon, would go up 25 times to -- from what it is currently, and obviously is designed to protect the health of people who are using the river and using river resources for generations to come. Has that been examined? I didn't see it in the RIFS discussions.

MR. HANSEN: That -- that was not specifically evaluated in area F, but in the Columbia River component risk assessment for the river, we evaluated a scenario called the adamant angler and it had a consumption of very similar to those levels.

MR. POLLET: How similar? As I recall, there is great concern your angler was only on the river a couple days a year for a few hours a year and didn't eat anywhere near the level of fish consumption that Native Americans are documented to have along the river, from the Columbia River into tribal fisheries, necessarily.

So how -- how many hours a day and a year

is your angler on in that and is that the basis for determining this proposal, or is that a separate document?

MR. HANSEN: We evaluated that in, like I said, in the Columbia River component. It has a similar consumption advisory. The tribal scenarios were evaluated in both the 100-F and in the -- in the Columbia River component.

The risk drivers for the risk for fish consumption were broad-scale contaminants that are found throughout the Columbia River, and we -- we evaluated whether there was releases from that -- from Hanford driving that risk. If my memory serves me correct, there was a -- carbon 14 was found in fish mostly near 100-K, and that was identified as a potential risk driver at that location. But there's nothing -- nothing was apparent near 100-F.

MR. POLLET: My second question has to do with groundwater. And in this proposal you proposed to restrain anyone from using groundwater for how many years, 150?

MR. HANSEN: A hundred and fifty.

MR. POLLET: Okay. So over and over again, the proposals say that you are going to have unrestricted use allowed as a cleanup standard,

meaning no restriction on use. The fine print: Except we're not going to allow irrigation or excavation.

If the area is open for, quote/unquote, unrestricted use, how are you going to prevent use of groundwater when it's illegal to withdraw the water for any consumptive use or any use from the Columbia River in Washington, but it is perfectly legal, without any permission from anyone, to install a groundwater monitoring well?

I looked through your documents and I've seen nothing describing how you're going to accomplish this. So, how are you going to do it? Are you seeking a change in regulations? What are you doing?

MR. HANSEN: The document clearly identifies that DOE's anticipated future land use is not residential, but we have agreed to clean up to residential standards.

There is no anticipated residential activity within -- within the foreseeable future out there at the 100-F area.

MR. POLLET: You know, I'm glad you can see 150 years into the future.

But you use the words "unrestricted use"

over and over again. Your land use plan is only inoperable -- is only operable during the period of time which DOE controls the area, and you don't control, necessarily, the Hanford Reach National Monument in the future and treaty rights which say that Native Americans may live along and fish at usual and accustomed fishing places.

So if we say it's safe to use it, I'd like to know how you are going to prevent anyone from actually using the groundwater when you say we've ceded this area to Fish and Wildlife or someone else, it's now available for unrestricted use, and 75 years from now someone says -- whether it's a ranger station or a visitors' station or someone living there temporarily or year-round, puts in a groundwater well, how you're going to stop that? What are you going to have in place to prevent it as part of this plan today?

MR. GUZZETTI: Chris Guzzetti, BPA, again.

The institutional control is more like a deed restriction. So in the event in the future if DOE were to transfer land, that restriction would go to whoever the new owner is.

MR. POLLET: You know --

MR. GUZZETTI: The new owner would --

MR. POLLET: There are no deed restrictions in your federal land transferred to another federal agency. You know that, right?

MR. GUZZETTI: Right. Well, but -- but -- but in the situation where they might -- where it may become a residential type use, right, then you have to probably be more of a local.

MR. POLLET: Again, not by inference. I mean, it's a national monument area. I'm not worried about it being transferred to, right along the river, to Gerry Pollet Development, Inc. I'm worried about someone saying: Oh, we have a tribal right. We've been told by the federal government it's safe, it's unrestricted use. We have a treaty right to have a seasonal set of homes here. We have a visitors' center, we have some other activities. And how would you put in place a guarantee that no one will use the groundwater?

MR. HANSEN: DOE is -- the federal government's going to be here for a very long time. There's -- the reactor's going to be there for 70 more years until the cores decay to the point where we can remove them. The central plateau is going to be there and actively managed for a very long time, and I don't think --

MR. POLLET: You have a Tri-Party Agreement that says you're going to get done cleaning up, God bless you, and think you're really going to live up to it by the end of the 2050 decade. We're talking about 150 years.

Clearly, it sounds as if you're not even aware of the fact that we have no restrictions on groundwater wells being installed in Washington. So even if you had a deed restriction that was transferred to private property, there would be no way of enforcing that per groundwater well because no one is going to check it and check the deed if someone develops this area. And you haven't, apparently, found out this. This is very disturbing. It's not like it's the first time we've raised this.

Finally, last question. There is the liquid retention basin area with chrom VI under it. In the plan it says that the chrom VI exceeds soil levels -- contamination exceeds soil levels at a level at which we would need -- let me rephrase this.

It says chrom VI exceeds the level at which the surface water of the river is actually protected to flow from soil to groundwater and into

the river.

You're nodding your head.

So if that's the case, I'm concerned why we're not excavating that chrom and why we're stopping at 15 feet. But my question is: How come that's not presented clearly in your slides and in the fact sheet, that you do have an area where chrom VI is expected to reach the river and potentially exceed the surface water level for protection?

MR. NEATH: Okay. The site was excavated some years ago as a retention basin. It was a liquid site, so the reactor coolant water was actually disposed of to that site and there was a leakage there outside the basin. There was also -- of course, the water eventually was diverted over to the effluent pipeline to the river.

The excavation only went down to about 20 feet, I believe, and the cleanup levels that were achieved at that time were evaluated against a mobility calculation, a leach rate for those soils that allowed the rate that was left there. It's somewhere along the lines of about six parts per billion. So that was considered at that time of the excavation to be protective of the site, of both the groundwater and the river.

Our next opportunity to calculate that was utilizing a little more sophisticated software, and we determined that the protectiveness of the site is -- is protective if you don't irrigate that -- that site, as you point out.

That is described pretty well in the proposed plan, and the appendix of the -- the appendix of the RIFS has quite the detailed description of that.

So the normal use of this area that we're expecting, as described earlier, is not an irrigated site.

MR. POLLET: And for how long will you bar irrigation on this site?

MR. NEATH: That's a good question. I think we can probably expect that this hexavalent chromium residual is not likely to be mobile, in our estimation, in the first place.

But over time, you would expect that -- a dispersion of that to occur, probably a very long time period, and that that concentration would likely disperse over a long period of time. It's not likely to stay in one place. But it would be very slow and not expected to be contaminating the river over a long period of time.

MR. POLLET: So in answer to my question how long, would you say you're actually proposing a restriction longer than 150 years or less in that second --

MR. HANSEN: Right now we've not put a timeline on that. What we would do is if there was a change in land use, if the -- if -- even though it's not foreseeable, if for some reason the government decided to transfer it out of -- out of federal ownership -- which is not foreseen. It is not anticipated. There is no expectations. There's no plans.

But we, through our five-year review process, because contamination is left in place and any change in land use, we would be required to -- to evaluate those, we would likely go back and look to see if -- what those concentrations are to see if we needed to -- if that restriction would need to remain.

And we, as seen in other locations across the Hanford site, whether there's a residual in this level of five or six parts per million in the soil, we have not been able to find it because quite likely a natural attenuation of that chromium converting from hexavalent chromium to trivalent

chromium.

So we would -- we would check at that condition where we would need to make a decision on whether that actually would remain. Right now there's no plans to -- to irrigate that area, and it -- that would take a -- a change in land use, which is not anticipated. If it were to change, we'd have to reevaluate it.

MR. SERRES: What the --

MR. BOHRMANN: Hold on, Dan. Trying to --

MR. SERRES: All right.

MR. BOHRMANN: -- do a time check here. So we're a little over 7:30. I want to make sure we have enough time to get to the formal comment.

I want to go back to the webinar here. Is there any questions from anyone on the Webinar?

No questions from the webinar.

Since you've already asked one question, I just want to make sure if there's someone who hasn't asked a question yet, and we'll get back to you here.

Yes, sir.

And as Gerry pointed out, if there's folks on the webinar that are having a hard time hearing, let's make sure we -- I think you have to get kind

of close to these mics to have them project, so -- thank you.

MR. ZORICH: My name's Nathan Zorich, and I had a question for the representative from Department of Energy. And it's particular to one of your slides, so if you could bring up slide 14 for me.

Oh, I guess that wasn't 14. Sorry. Right there.

Could you just point out for me on this slide where the main stem Chinook spawning beds are at?

Do you have a sense of that?

MR. HANSEN: There are various locations along the Hanford Reach where Chinook spawn. The main spawning areas, I believe, are upstream of this. There are some downstream of this near Ringold, but I could not tell you around here.

MR. ZORICH: Okay. My second question has to do with the flood question, which I think is a real important one.

Some of the slides that you showed during the excavation, all the rock you guys were digging up was all river rock. Right? This entire area is just really a flood plain of the Columbia River,

which is why you have so much groundwater moving through there.

Do you have a sense of what the hundred-year flood looks like coming across the Hanford Reach and how that -- in 150 years, we're likely to see that? What impact would that then have on moving the mobile on -- these contaminants into the river?

MR. HANSEN: Was -- was the last couple years considered like a 75-year?

I want to say, like, 400,000 cfs two years ago, three years ago. And it was -- it was high, but it was not -- it was -- in was in ending in these area. This area through here becomes a flow-through channel. But it's -- it would take a majorly high flow to get up over the -- over the embankment there.

MR. ZORICH: All right. Thank you.

MR. BOHRMANN: Thanks. We got one question back here. Sir.

MR. POSEY: Okay. What role does the rainwater --

MALE: Name?

MR. POSEY: My name's Jeremy Posey. I live here in Hood River County. I want to know what

role rainwater takes in place of spreading the contamination.

MR. HANSEN: In the calculation of -- of infiltration down through the soil into the groundwater, we -- we do have some long-term monitoring stations looking at, with a certain amount of rainfall, how much will get through the soil into the -- in the groundwater, how much will be used by plants, those sorts of things. And the average around the site is about four millimeters per year.

MR. POSEY: Okay. That doesn't seem like a lot, but over 150 years, how much is that?

MR. HANSEN: Our modeling right now goes out about a thousand years.

MR. POSEY: A thousand years. Okay.

So I see the nitrate is -- is what's, you know, moving the fastest or, the most, you know, readily. What is the cause of that?

MR.HANSEN: Well, different contaminants have different mobility. The strontium-90 is very immobile. Hexavalent chromium is highly mobile. Nitrate is highly mobile.

And, Greg, you probably understand this a little more about where that nitrate came from and

why it's moved south.

MR. SINTON: I think that the main thing you're seeing with that nitrate plume is the -- the size of the original source and how long it's been going on. Plus, that was probably from the Experimental Animal Farm that was up in the center of the three -- of that F area there. And that was operating up to about 1965, so that was quite --

MR. POSEY: So leave that to --

MR. SINTON: -- a while ago.

MR. POSEY: Okay. All right.

MR. SINTON: So way back then, there was a lot of release and so it had the time to move to the south as it has there. That's why that plume is so large.

MR. POSEY: Okay. How much nuclear power are we still using or creating radiation of if at this time?

MR. HANSEN: At Hanford, none.

MR. POSEY: In -- in the U.S.

MR. HANSEN: I don't -- I need the location.

MR. POSEY: You don't know. Okay. Is there any end in sight of the use of nuclear power?

MALE: What did he say?

MR. POSEY: Was that -- that was a direct no?

MALE: Would you please --

MR. HANSEN: I -- I don't know.

MR. POSEY: Would you please say what you mean by at Hanford since there's a commercial reactor on the Hanford Indian Reservation. Right? But it's not --

MR. HANSEN: That's true, but that's not operated by DOE.

MR. POSEY: Okay. But it's on the Hanford Reach, right? So there's continual radiation being created at the site or near the site.

MR. HANSEN: Sure.

MR. POSEY: Okay. And how is that contamination being stopped from spreading when there's multiple leaking dual-lined containers and single-lined containers known to be leaking, 60, 70-plus containers known to be leaking, and no end in sight and we're adding to those containers continually every day, day after day, with no end in sight.

MR. HANSEN: All I can tell you is for the operations at Hanford, we are doing everything we can within the budget that Congress gives us to deal

with -- with this contamination.

MR. POSEY: All right. So is there any way you can go to your boss and take it the next step?

MR. HANSEN: I don't know what that step would be.

MR. POSEY: When you go to the manager above you and you raise a complaint because there's something obviously -- there's an obvious problem.

Radiation kills people when -- you know, in direct contact, and so to be continually creating that problem when -- solar power can release all those problems. And if the jobs -- any jobs lost in radiation or nuclear power can be gained in solar, wind, geothermal power.

MR. BOHRMANN: And thank you, sir. We appreciate the concern. It's a little bit out of scope for that discussion tonight, so...

MR. POSEY: All right.

MR. BOHRMANN: Anybody else before we go to -- back to Jurgen.

MR. HESS: A couple of follow-up questions. Jurgen Hess.

What is the position of Washington Department of Ecology in this project? And also,

I'd like to know the position of the tribal nation, particularly the Nez Perce.

MR. BOHRMANN: Nina, do you want to address Ecology's role in this decision?

MS. MINARD: I could just say a few words on it. I think the argument --

MR. BOHRMANN: Do you want to come up to the mic real quick, or Jim's going to --

MS. MINARD: Thank you. I'm Nina Minard with the Department of Ecology.

And our -- when there's an Ecology-led operable unit with a proposed plan decision, is Ecology reviews it and we make comments on the proposed plan as to whether we agree or disagree in a letter that is sent to EPA. We work through EPA because EPA has the final approval. And we think that this decision is consistent with Ecology guidelines -- with Ecology guidelines -- with the CERCLA guidelines, and we approve of it.

MR HESS: I'm not going to let you off the hook that easy. In a way, that's a disservice to the public because at that point -- we need to know now so we can provide our input based on what your feelings are. I mean, if you do it later, wait till they make a decision, it's too late. So we need to

know now.

MS. MINARD: We have already reviewed the proposed plan and it conforms with our state regulations, and which MTCA is an AWAR (phonetic) and that would be the state equivalent of some of the CERCLA regulations. And in that point, we have already reviewed it and one of the reasons why we're here is to support the EPA and DOE in their decision-making process.

Does that answer your question?

MR. HESS: I guess it's good enough. How about the next phase?

MR. BOHRMANN: Can you restate that?

MR. HESS: Yeah.

MR. BOHRMANN: I'm not sure who would address that.

MR. HESS: What is -- what is the position on the -- on this project from the tribal nations, particularly the Nez Perce?

MR. SINTON: The Nez Perce had sent us a letter on the Draft A Proposed Plan, and they were supportive of the proposed remedies. They did have some other concerns with some of the particulars, but they were supportive of the MNA, I think, largely because it's least disruptive of the surface

use.

We've also received some comments from the Yakama Nation and they are less supportive. They favor Alternative Groundwater 4, which is pump and treat.

MR. BOHRMANN: Okay. Greg, did you have one more?

MR. DEBRUIN: Yeah. Just, you know, they raised the question about water infiltration and irrigation --

MR. BOHRMANN: Would you mind speaking in the mic just for the folks on the webinar.

MR. DEBRUIN: The question again was raised from irrigation, how are you going to transfer groundwater, how are you going to keep the restrictions in place for 100 years, 150 years, 80 years. It's clear that the agencies don't have the answer. And so in order for somebody to come in and say, well, we support this -- and I'm kind of shocked to hear Ecology say: Oh, yeah, we're fine. I'm kind of going, well, wait a second. How do you resolve these issues? Well, we're fine, just move ahead.

So if you go to WPPSS Power Plant and you look at their worst-case scenario for a flood -- and

you can talk to Pam Brown, Harold Lecock (phonetic), anybody from the Tri-Cities. They know a 50-foot wall of water would come down the Columbia River. Fifty foot. That's what "Whoops" uses. They've talked to BPA about the dams; they will be removed. In a hundred years, they're coming out.

Now, this is something that I've talked about for years and years and years, and so it's in every document we've ever -- all the risk assessments, the original ones looking at the comprehensive risks along the Columbia River, all of those factors were supposed to be in there. But yet, they don't exist.

For some reason, you sit there and persuade people to believe that that environment is going to stay static. Eight inches a year of rain, maybe 11, may be worst case scenario. It's not real.

So I don't know how you can sit here and try to convince people that you've done your homework. That you've evaluated the scenarios, that you've evaluated the long-term costs, the potential long-term impacts, and done the cost analysis looking at all those other parameters. You haven't done it. It's clear. It'd blow you out of the

water.

Go look at "Whoops's" scenario, the worst-case scenario there is. Talk to BPA. You fail. You get a 50-foot wall of water out here and your containment and your scenarios and your things are all gone. And yet you're sitting here trying to convince somebody that in 150 years, everything's going to stay the same. Or 100 years. Or 80 years.

And you say: Oh, well, that beats the controls. A lot of good those will do if any of those other scenarios change. And so if they do change, worst-case scenario, what's your planning and how do you prevent from worst-case scenario? Where is that in your analysis? It's not there. I guarantee it. You could throw stuff at me forever and ever and ever, and I'll dig through it and I'll find it doesn't exist. Doesn't exist.

So for me, I'm saying to convince somebody to really come up and step up to the plate -- and I'm not representing a tribal nation, but if I was, whew, I'd be on you real fast just because of treaty rights.

But I'm not. I'm just an individual sitting here looking at the guys doing their jobs, and I'm saying you need to convince the world that this is a

good decision by doing those analyses and come back and say: Hey, we've listened to you, we've taken this into consideration, and we've run these scenarios. And, by the way, we might have to change some things.

But to sit here and tell us that this thing's going to remain static? I'm sorry, it's -- it's unbelievable. I can go to Disneyland, have more fun, you know. It's like -- this is ridiculous.

MR. BOHRMANN: Okay. Thank you. One more check on the webinar.

No other questions on the webinar. Okay. Anybody else have a last question before we move to our third part of our meeting here?

Okay. Well, let's go ahead and move on to the formal comment portion, then.

FORMAL PUBLIC COMMENT

MR. BOHRMANN: When you came in -- yes, sir.

MALE: Oh, I've got a comment on this.

MR. BOHRMANN: Okay. When you came in, you had an opportunity to sign in to provide public comment. Even if you didn't, everybody will have an opportunity to give public comment, and I think we'll just go down the -- down the line in order that you signed up.

And I'll just go ahead and call your name. If you could state your name again for the record. During this portion of the meeting, again, just as a reminder, the agencies won't be able to respond. But we will be responding -- or Department of Energy and other regulatory agencies will be responding to all formal comments after the end of the comment period.

So our first commenter is Dan Serres.

And if you could limit your comments to two, three minutes, roughly, and if we have time at the end, we can go through again if you want to give further comment.

MR. SERRES: Yeah. I've already had a

chance to speak, so I feel a little awkward going first, so I'm happy to defer to other folks. But I think we've got a small enough crowd, I'll just start by saying a couple things.

One, I think the idea of having a no-action alternative and then a one action alternative, the soil remediation, kind of -- that's clearly inadequate.

There probably are a range of things you could do with digging deeper in some of these areas and I think the plan lacks that full range of alternatives that would normally be presented in this type of analysis.

Secondly, I would just say that the idea that 150 years is going to be a reasonable time frame for dealing with strontium or other contaminants, it just -- it doesn't pass the test of -- kind of the laugh test for most folks.

A hundred fifty years is a long time and none of us really believe that it's reasonable to believe so much contamination of the soil or its usual controls to mitigate or for MNA to, you know -- for that process to decay it away.

So I guess what we would ask is that you take a much more active approach and look at

Groundwater No. 4, that alternative, as something that makes a lot more sense.

And then sort of ultimately on the process, I think that -- the other thing that was really glaring to me was the fact that you've got almost a third of the Hanford site. I mean, it's a huge swath of Hanford lumped into this one big decision.

The issues that face the areas just right near the reactor are very different than all the inactive units that surround it, and so I would suggest that these really should have been separate decisions. It doesn't make sense to lump in, you know, hundreds of -- you know, 150 square miles and then this one reactor area that's very acutely contaminated. Those things are so different, it makes it very difficult for the public to address the key issues in either one. And so I would suggest, respectfully, that that -- that's maybe something you should think about parsing out and separating going forward.

Lastly, I would -- I would say that in the F area, there's a real need to consult with federal agencies when it comes to threatened and endangered species. This is an incredibly critical area for

salmon recovery, and the lack of consultation on this river corridor of decisions is something that we think is a glaring flaw in -- in how we're moving forward.

So, with that, thank you.

MR. BOHRMANN: Thank you. Abigail Cermak.

MS. CERMAK: Thank you. I'm Abigail Cermak. Just like Dan, I also had an opportunity to speak, but I do have a couple things to mention.

One's going back to the Groundwater 4 alternative and the fact that maybe when people look at the price tag, it's sticker shock. But if we're looking at the cost of that plan over the time frame, it seems to be -- that we wouldn't be spending very much money to implement that plan, especially when you look at the fact that we're spending $2 billion a year total on Hanford? Two hundred million seems like nothing, especially if you stretch it over, you know, the time frame.

Secondly, I think it's odd -- and this goes back to the groundwater alternatives. I think it's odd that there's such a huge cost difference between Groundwater 2 alternative, which is preferred, and then the Groundwater 3 and Groundwater 4. It seems like there's no middle

ground cost taken into consideration, and that with the Groundwater 4, even with that remedy, we're not addressing strontium-90 or suggesting anything other than natural attenuation for the alternatives.

I believe that's about it. Thank you.

MR. BOHRMANN: Thank you. Next up, Robbie Lapp?

MALE: He -- she left.

MR. BOHRMANN: Jurgen Hess.

MR. HESS: Thank you. Jurgen Hess, Hood River.

What should the standards be for cleaning up this area? I think it should be left the way it was prior to the initial development in the 1940s. That should be the standard. Anything else is something kind of contrived.

And particularly the 150 years. I mean, to me, with all these brains, the scientists that you have, if you can't remediate strontium-90 in less than 90 years, you've got to go back -- or 150 years, you've got to go back to the drawing board. You've got to figure it out.

Your predecessors figured out how to use this material to make nuclear bombs. You've got to figure that out.

The water should be completely cleaned up for unrestricted use using active cleanup, not MNA, monitored attention. I particularly agree with -- with the position of the Yakama Nation on Alternative 4, with that exception; 150 years, I think, is unconscionable.

Consider permeable barriers like the 100-N area. It was done there; why not here?

And I have to agree with Dan Serres that when I looked at the map, I said: Here's the real festering problem and yet, this huge area is so different. I think we need to separate these out and do two different kinds of things dealing with the two different -- the nature of that. You have a specific problem in one area, and the rest of it is so completely different.

Thank you.

MR. BOHRMANN: Thank you. Next, John Wood was a might be commenting. John, do you have anything?

MR. WOOD: Yeah, I've got a little something here. And I mean this in the best of faith. I know you guys are doing your job and there's a lot of constraints and everything else, but, realistically, we've got to fix this.

And so kind of to put things in perspective, I'm not a scientist, but I am a realist. And, you know, what I see is that all this pollution began indoors in buildings on the Hanford site and it's steadily been spreading far and wide and it's covering an enormous area.

The DOE and DEQ have been raking this material leaked and dispersed back towards a central leaky pothole that's much harder than the building -- that's much larger than the buildings of its origins.

And the cost of the most expensive options discussed here are really not that big. They're less than a fifth of the cost of one of the big bombers that we've been buying whole fleets of, and there's almost no objection over the cost of those.

So we don't really have another enemy at the moment who needs to be nuked. So what we can do, perhaps, is to clean up Hanford by appealing to those who have the purse strings and use some of our defense budget. Because what we need, as citizens of America, all of us, is we need defense against a bunch of stuff that isn't just AK-47s and homemade bombs. We need defense against stuff like this, radiation and -- well, heck, microbes and disease

organisms, all kinds of stuff.

The defense budget we've got is unlimited and it's only applied towards, basically, bullets. This is what we need defense against, and the future needs defense against it as well.

So we spend a whole lot more than, I think, the most expensive alternative here just to monitor domestic citizen emails every year to find out if there's going to be a dirty bomb. Well, there's your dirty bomb, right there. And the DOE seems to be the bomber who's trying to ensure that we all get a dose of contamination through its failure to act. Okay?

We've got to get going. We're supposed to be -- we tell ourselves that we're the greatest nation in the world, but we're trying to do the worst possible job cleaning up the mess that was made in good faith long ago.

That's all I have to say.

MR. BOHRMANN: Thank you. Brian Brown.

MR. BROWN: Yes. I'd just like to go on the record saying that I'm not in favor of the DOE's preferred alternative. Monitor natural attenuation seems like a do-nothing approach, and this really seems to me like there's too much at stake to take

the easy way out.

I think that I would be more in favor, personally, of the Alternative 4 in that it seems to take a more proactive approach. And my guess is that if I were to look at this situation in 150 years, it would likely be the least costly because it seems to me like, over the course of these 150 years, the cost of these plumes moving and then having to contain the entire site instead of individual leakages, the plumes.

And it really is the government's responsibility to bring the site back somewhat close to what it was beforehand. And I think that what the citizens would like to see is for the reach of the Columbia River through the Hanford Reservation to be available for unrestricted use along the corridor.

Thank you.

MR. BOHRMANN: Thank you. Nathan Zorich.

MR. ZORICH: My name's Nathan Zorich and, as you can tell by my hat, I'm a proud graduate of Richland High School.

Growing up in Richland, I learned a lot about the history of the Hanford Nuclear Reservation and what went on there. And I think there's a lot

to be proud about for a while. I think a lot of shortcuts were taken during and before the war to really kind of speed up production. It's after that, that things really fell apart. And that's the legacy that we really need to deal with.

When the federal government came in and took that land from Washington State and its citizens, it had to be a gold mine. I think the state was behind that. Through time, we continue to take shortcuts and do a slipshod job of containing their work. And now I think it's the government's responsibility to clean that up.

They saved a lot of money by taking shortcuts; now it's time to spend some money to make that right with the citizens of Washington and people of the northwest and people that live up and down the Columbia corridor.

I currently have six nieces and nephews that still live in Richland. Richland pulls its drinking water from the Columbia River. They've grown up there, they've lived there most of their lives, and I worry about them. I want them to be healthy. And I think cleaning up strontium in this region's important for their health, for the health of fish and wildlife in the region.

Thank you.

MR. BOHRMANN: Thank you. The last person I have signed up for comment is Gerry Pollet.

MR. POLLET: Gerry Pollet, speaking for Heart of America Northwest and our 16,000 members in Washington and Oregon.

The Energy Department says over and over again that it is going to be done with cleanup along the Columbia River by 2016. Oh, dream on. What a great idea that would be.

And to do it, the Energy Department would need to actually spend a little bit of money instead of saying we can save 150 million and leave contamination in place for 150 years.

When did you change the definition of the word "done"? That's what I'd like to know. "Done" does not mean leaving it behind. It means when you cleaned it up to allow for unrestricted use.

When we say "unrestricted use," we don't mean you can walk on it a few days a year, but don't dream of effectively using the area for its highest and most likely uses in the future along the Columbia River.

The Energy Department is not the boss of the world, it turns out, oddly enough, and it will

not determine what the future land uses will be of the Hanford Reach and the Columbia River corridor when it is, quote/unquote, done with cleanup.

Part of this decision will be made by Fish and Wildlife Service for the Hanford Reach National Monument. It will be made by many other entities, but it is not something that is decided in the Department of Energy's land use plan document, which EPA and the state of Washington sent to the Energy department when it was issued. You may not use this in cleanup decision-making. It only governs your land use decisions while you are operating the site.

And I have to say, it is shameful that Washington state and EPA appear to have lost your institutional memories. You need to go back into your own records and say: We told you, you can't use this as a decision-making document. Because that is clearly what the Energy Department's doing today, and you are sitting here and saying: This plan is great. The Energy Department says the land use is going to be conservation, the occasional visitor.

Well, putting aside history, let's turn to what the law says. The federal Superfund law, CERCLA, says that we have to clean up so that the

additional cancer risks for the most exposed individuals who are likely to use the site under foreseeable circumstances, will be one additional cancer for one in 10,000 people who use it. Ten thousand people use it? Maximum number of cancer is one. But the starting point, EPA's rules say, is no more than one additional cancer for every million people who use the site.

And federal law says Washington State's cleanup standards apply as well. And when they are more stringent, they must be followed. Washington State's cleanup law, called MTCA, Model Toxics Control Act, says that the additional cancer risk rate may not be more than one additional cancer for every million people exposed to each individual contaminant and one additional cancer for every 100,000 people who are likely to be exposed in the future.

Now, remember that. Federal law says you can go down to one in 10,000; Washington State's law is 10 times more protective. Washington State's law very clearly includes radionuclides as carcinogens because, guess what? They are carcinogenic. It's a shocker, I know.

But yet the Energy Department's documents say:

We are only applying the Superfund surplus standard to radionuclides for cancer risk, even though Washington State law clearly advised we're only going to apply Washington state cancer risk standards to the non-radiological risks.

Where did they get this? They decided that's the way they would have liked the law to be, not the way the law is. And Washington State, you need to speak up about this because it is your law.

And despite what you heard earlier tonight, the Department of Energy's conservation plan -- conservation land use, in other words -- we visit occasionally the national monument. Well, the national monument only extends for a short way inland. What about the other sites?

Energy Department says it's all going to be conservation, but they have no idea how it will be enforced, as we heard earlier, nor have they ever taken into account, nor has EPA or Ecology commented on the fact that you have no legal regime under which we can prevent the use of groundwater in the future when the Energy Department is no longer running the site unless Washington state changes its laws.

Now, some of us would love to see

Washington State change its law to say when you drill a well, you need a permit. But that isn't the case. But Washington State does have a law that says you can't withdraw any more water out of the Columbia River.

So, ironically, the Energy Department says we're going to have people who are using this area, visiting it, we may have some campgrounds, we may have a ranger residing here for the Reach National Monument; where will they get their water? Energy Department says out of the Columbia River. Well, illegal. Where will they get their water? Well, they'll probably dig a well.

Now, there is something else when we talk about unrestricted land use. Who are the people who are most likely to be using this area of the Columbia River intensely because they have a legal right to do so?

Now, there's a picture up on the screen right now of a person kayaking along the river. That person made camp and they use groundwater for drinking water out of a well. They will -- if they use tap water, let's look at what their risks may be.

But we know that the people who are most

likely to be exposed, what we call the reasonable maximum exposure scenario, are Native American Nations with treaty rights to not only fish at our usual and accustomed stations, which include this entire stretch of the river, but to live along it and fish and gather plants and resources as part of that.

So what is the cancer risk under that scenario? As reviewed by the River Corridor Base Line Risk Assessment -- oh, I guess 2011, we're talking about a tribal cancer risk where, essentially, one out of every 1,000 tribal members exercising their treaty rights dies of cancer.

Cancer risks. Approximately for every one person who dies in the general population, you have three additional cancers. Native Americans, sadly, have a much higher fatal cancer risk rate. It's one, two or worse.

So you're going to have twice that number, perhaps three times that number, with cancer. Children are, of course, three to ten times more susceptible to cancer from the same carcinogenic exposure as an adult.

So how does this jibe? The law says, under federal Superfund, only one in 10,000 people

can get cancer. State law, one in 100,000. And the River Corridor Baseline Risk Assessment says that if we allow Native Americans to have unrestricted use, as guaranteed by treaty rights -- and Washington State EPA, and U.S. DOE are all committed to ensuring that those treaty rights are respected and that they are allowed to return and use these lands and river resources -- the cancer risk under the scenario run by the agency's, you know, baseline risk assessment is a one in 1,000 cancer risk level.

That's not only unacceptable and immoral, if you say to people it's unrestricted, come on back, it's not any different than handing tribes a smallpox-infested blanket as we've done a century ago, is it? Come on back; your cancer risk, we're going to tell you in fine print, is much, much higher than is acceptable for the general public.

Furthermore, there's been no analysis of how this action complies with the Federal Civil Rights Act and our environmental justice standards, including Title VII, and puts at risk, for instance, state agency funding because you have a very clear disparate impact on the foreseeable population exposed, the Native American tribes, when you have -- would otherwise say, well, to the general, non-

minority public: You have a cancer risk that's acceptable.

Washington State's cancer risk law needs to be applied here and reversely so, and includes both radionuclides and the non-rad, and they have to be summed together and then we have to take actions based on cleaning up to meet that level from restricted use.

And that includes, where we know we have the ability to do so, taking action on the strontium-90 as we are doing elsewhere along Hanford Reach. Ironically, here the Energy Department says: Nah, we're not interested in doing it. But at N area, the 300 area, the Energy Department says: We have technologies that we're going to try. We're going to rely on them there.

We're concerned about relying on them without them being proven, ironically; here they're saying we're not going to try at all. That's wrong. They need to be tried, and we cannot allow a claim that we're going to prevent public use of the -- any area of the Hanford Reach for 150 years or even an additional 50 years.

Let's get the Hanford Reach cleaned up so that it is safe for public and tribal use in the

next decade and a half, which is accomplishable for the groundwater, and we can accomplish that for the soil sites by cleaning up the deeper contamination, going to 40 feet where necessary instead of 15 for the soil sites, and cleaning up the groundwater and using technologies to do so.

And then we can actually all say together how proud we are that we cleaned up the Columbia River and we're done, not saying that we changed the definition of what we mean by when we say we're done: You can use the site, we're done. Come on in. Fine print: Your children will have an unacceptably high cancer risk.

Thank you.

MR. BOHRMANN: Okay. So that concludes the people that have -- on our list that have signed up. So is there anybody else you would like to -- oh, Greg?

MR. DEBRUIN: Since nothing I said was recorded, so I'll go back and start again. Thank you.

My name is Greg Debruin, and these are my formal comments.

Thank you, Gerry, very much for hitting the nail on the head.

Admiral Watkins, when the Hanford group signed in 1989, said to the tribes, said to the state of Washington and the state of Oregon: We're going to clean up Hanford, return the land back to the way it was. Okay? It was a simple statement. It was a commitment. John Wagner, a good friend of mine, came back and said: We have a problem here.

We've got a big problem. We've got an agency that doesn't want to talk about risk, that doesn't want to talk about how contaminated the site is, who at Congress wants to cut our funding off, and somehow we have to justify the work we're doing.

So we have an agency that wanted to hide everything for a long, long time. And the sad part is, 25 years later, we're playing games. The risks are real. The commitments are real.

Think of just one group, the Native Americans. It's their land. Their usual and custom places. They get to come back here and fish, live, and live happily. But then think of the white folks just downstream and then all the other people of color that live off the Columbia River. The Tri-Cities. Your home. And you say: Oh, it's going to be fine. No, it's not fine.

You don't check the duckweed every 14 days

for the contaminants that are flowing downriver. You haven't done that in forever. Never have, never will. If you'd do it on a bridge because they can tell you the daily flux and load of all the contaminants coming in.

So what we have here is we have a commitment. When Keith Klein came in from Rocky Flats, we had a vision. His vision was that by 2011 -- or '10, I think it was, we're going to release the sites along the Columbia River. This is the goal. Then it changed to 2015. So I'm really shocked that the state of Washington is sitting here saying, and EPA is sitting here saying: Oh, yeah, we're fine with this.

Well, great. Okay. So DOE's taking our land. They aren't giving it back to us. They're saying you can have it in 150 years. Maybe. But if you're on there and you're exposed, the risk is too high. But we don't want to look at that part of the law. We only want to look at the part of law that we're applying, but it doesn't apply to the other people that could be using it.

The state of Washington says, well, wait. Our land's being taken. Oh, but the state of Washington shouldn't be saying another thing. Oh,

but you're taking our groundwater. Wait, you can't take our groundwater. You can't take it over the 200 area, you can't take it anywhere. You can't take that resource from it. If you do, there's huge damages to pay.

But yet you're taking it from us. But yet Ecology's sitting here saying we're perfectly fine with the situation. And EPA's saying it. I'm saying: Excuse me? You're taking our water. And yet we can't use the Columbia River anymore because we can't draw out of there anymore. And yet, this is a good decision. Hmm. Interesting.

The other thing we're saying in this document is the money; 194 million is too much money. There's really no justification for $194 million. You can probably take 30 million off the top and still get it done. It's just the way the game works.

But we're sitting here trying to tell the public that this is the best that we can do. We don't talk about strontium-90 and the fact that pump and treat worked for how many years in the N area. Did a great job until finally there was a push back, says: Oh, we aren't getting the best bang for the buck. Let's turn it off, even though it was still

capturing strontium-90. Then we used kitty litter. Sure. But here? Oh, we got strontium-90, don't worry about it. We got nitrate. Nah, don't worry about it. We've got these contaminants sitting right at the edge of the river; don't worry about it.

So how is it that you can actually say this when there's so many points that have been brought up tonight that there's gaps, there's assumptions, there's false promises, there's violations of treaty rights, there's violation of state law.

And yet will Congress come up here and sit down and say -- and I understand this is -- believe me, 25 years of my life looking at how the federal agency runs, and it's -- you guys are driven to do a job. You're being paid to do your analysis, to get a decision on paper, to move forward because your boss is upstairs that wants the decision.

But the problem is, it's not integrated. The problem is we aren't really creating solutions that is a win-win for everybody. We talk about money, but yet Hanford takes $2 billion out of the federal coffers, more than EM has, over half of what EM has, and yet we're producing this as a result?

You know, for me, it's kind of an insult to the management because we aren't creating solutions that are getting the deliverables that are required under law and under treaty rights and none of our expectations of future generations and to the people that live here in the future. We can do that. But the system you work in right now doesn't want that. They want to play this malleable game where we create a solution over here and hope we can slide it off so we can clean it up and maybe call it clean and then move on.

So you came to this meeting tonight and now you realize it doesn't work. You know. Unfortunately, you have to go back to somebody that's upstairs and say to somebody: You know, we've got some issues here we need to resolve.

And to keep it really focused, really focused, you can't take our groundwater. Period. You can't do it. The state of Washington should be just absolutely livid, saying: Excuse me? You're taking our groundwater? Hey, (whistles). No. We'll see you in court.

But I know why, 25 years of fighting this battle, it's the Tri-Party Agreement. No, it's not. It's three agencies who are best friends sitting

around trying to figure out the easiest way to move down this thing while we still all get paid, we eventually retire, and then we're done and somebody else can pick up this ball and try to move it forward.

No. No. I'm sorry. It's time to get the job done. It's time to come in and put together a plan that is real, meaningful, and meets the requirements of the people that are sitting here and the people that aren't sitting here. We have the technologies. We have the money. We don't have the agencies that's willing to go ahead and say: Oh, we've got to go to -- you know, Dan, it might cost us $220 million because we've got to do a little extra work because of all these things we've pointed out. So big deal. We do it. But then in five years, or seven years, or eight years, whatever the number is, it's done. It's clean. Everybody goes, yep, we did that one.

But for some reason, there's some bean counter somewhere -- and I've never found one. Believe me, I've been to headquarters and all over looking for the magical bean counter when it's full.

There is no magic number. When we first started that cleanup, it was like $700 million, and

Tom Grogan said it was a train wreck of money. And I looked at him and said, baloney. Here we are at 1.2 billion at that time. I said: You get over $2 billion a year. They did. And they stayed at $2 billion a year forever.

The problem is the machine isn't doing the work, isn't efficient. And it's not creating solutions. It's creating excuses to create more jobs to continue the process.

So I say: No, shut this thing down. Go back to the drawing boards. Come up with solutions that give the people the deliverables that meet the requirements under law. And if you can't do it, then find a different job and find somebody else that'll come in and do it for you. Because you didn't do it. It didn't pass.

Thank you. And thank you for your work and I'm sorry that you're trapped on this morph, but that's the way it is. Good night.

MR. BOHRMANN: Thank you. We're just getting close to 8:30 here, but is there anyone else who would like to provide a comment or elaborate on their earlier comments?

MALE: Is there anyone who wants this plume to get worse? Come on. Sorry. Already in

evidence.

FEMALE: Is there -- how is the webinar working in terms of people commenting?

MR. BOHRMANN: People in the webinar weren't able to provide formal comment through an audio system, so they'll be able to write a comment through a written or email until August 11th.

MR. POLLET: You know, I -- I have to tell you that was not said in the -- so we encouraged people who couldn't be here tonight, that they would fully participate, and that makes this a real problem in terms of failing because but we did not have them fully participate in the comments.

MR. BOHRMANN: So that's, you know, something we'll consider and take back and see if there's, you know, a way we can improve that process.

How many people do we have on the webinar?

MALE: Right about ten. And we asked for comments, questions throughout all the comment period and question period and didn't get them.

MR. BOHRMANN: Well, I want to thank everybody for coming out tonight, taking some time out of your evening to come talk to us.

Again, this comment period's open until

August 11th, so please, in addition to your comments this evening, you have an opportunity over the next few weeks to email or to mail the agencies, any further thoughts you have on this decision.

So, thank you very much, and have a good night.

(Whereupon, the Public Hearing was concluded.)

CERTIFICATE

I, Donald Polen, Notary Public, certify that the foregoing was reported by stenographic and/or means, that same was reduced to written form; that the transcript prepared by me, or under my direction, is a and accurate record of same to the best of my knowledge ability; that there is no relation nor employment by any attorney or counsel employed by the parties hereto, nor financial or otherwise interest in the action filed or outcome.

IN WITNESS HEREOF, I have hereunto set my hand this 11th day of August, 2014.

/s/ Donald Polen

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