

**Naegeli Reporting**  
"The Deposition Experts"

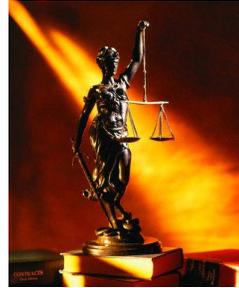
(800) 528-3335

**NaegeliReporting.com**

Serving all of Washington, Oregon, Idaho and the Nation  
Selected "Best Court Reporting Firm"

Court Reporting | Videography | Copying and Scanning | Trial Presentation | Interpreters | Videoconferencing

PROPOSED CLEANUP ACTIONS FOR REMEDIATION OF  
HANFORD WASTE SITES  
CONTAMINATED WITH PLUTONIUM AND CESIUM



VOLUME III  
MEETING  
Tuesday, July 26, 2011  
Best Western, Columbia Room  
Hood River, Oregon

REPORTED BY: Michele J. Lucas, Court Reporter

1 **VOLUME III**

2 **MEETING**

3 **Tuesday, July 26, 2011**

4 **7:01 p.m.**

5  
6 **MR. NILES:** Thank you all for coming it  
7 was a gorgeous evening out there. Thank you for  
8 giving up your summer evening and talk with us  
9 tonight.

10 It is always encouraging to see the  
11 support we get --

12 **(Brief interruption)**

13 **MR. NILES:** It is always encouraging to  
14 see the support we get in Hood River and the mid  
15 gorge. Always get a consistent group of folks to  
16 come out and provide some comments.

17 My name is Ken Niles. I work for the  
18 Oregon Department of Energy. I head up the State of  
19 Oregon's oversights of the Hanford cleanup, and a  
20 lot of you have seen me at meetings like this in my  
21 state role. A little bit different role for me  
22 tonight in that when the Department of Energy  
23 approached me a few weeks ago asking whether or not  
24 there would be interest for a meeting in Hood River  
25 and in Portland on this topic, and I said

1 absolutely. And they said: Well, we are a little  
2 bit tight in terms of our budget. We really can't  
3 afford a professional facilitator. Would you mind  
4 doing that.

5 So they are saving some money, which is a  
6 good thing, and I will ask for your help in making  
7 this a good meeting tonight. So, again, thank you  
8 for coming.

9 We are here to talk about -- you know, a  
10 lot of you have been here. We have talked about  
11 bits and pieces of Hanford cleanup. Hopefully this  
12 will make sense tonight in terms of how it all fits  
13 together, but tonight we are talking about 21  
14 different waste sites and a proposed plan by the  
15 tri-parties as to what to do with those waste sites.

16 And there is a lot of information around  
17 the room. I know a lot of you have received  
18 information via E-mail and otherwise. And we have  
19 got a couple of speakers here that are going to  
20 explain some of these things for you. What we would  
21 like to do is, we have got a speaker from the  
22 Department of Energy who is going to talk a little  
23 bit about this, a speaker from one of the  
24 regulators, in this case, the Environmental  
25 Protection Agency. I will step out of this role for

1 just a couple of minutes and provide you some  
2 comments on behalf of Oregon. We have an  
3 alternative public viewpoint that is going to be  
4 joint shared by Columbia River Keeper and Heart of  
5 America Northwest.

6           We will take some time, hopefully not too  
7 long but as much time as we need, to clarify things,  
8 to do a little Q and A to answer things or clarify  
9 things that might come up during the discussion.  
10 And then really the purpose of the meeting is for  
11 the tri-party agencies to get comments from you  
12 about what they are proposing to do. So we will  
13 have a formal public comment period as the last  
14 thing that will run through the remainder of the  
15 meeting.

16           So that is our plan. Our plan is to be  
17 out of here by about 9:00. I think we have a few  
18 enough people that we should be able to do that  
19 without cutting people's testimony time too much.  
20 But we will try and see if three minutes or so works  
21 for everybody to do that. So that is the plan.

22           Does that sound right with everybody to do  
23 that?

24           Yes, sir.

25           **MALE SPEAKER:** You are referring to the

1 tri-party.

2 **MR. NILES:** Yes.

3 **MALE SPEAKER:** What's that?

4 **MR. NILES:** The tri-parties is the U.S.  
5 Department of Energy which is the owner and  
6 operator, if you will, of the Hanford site, and it  
7 is two regulators, the State of Washington and the  
8 U.S. Environmental Protection Agency. Together they  
9 form the tri-party agencies and have an agreement  
10 that sets up cleanup milestones at Hanford. So that  
11 is the tri-party agencies.

12 So before we get started with our DOE  
13 speaker, let me just write this down here for you  
14 real briefly just because the official thing we are  
15 here for tonight is to comment on the draft proposed  
16 plan on the CW-5 and PW-1, 3 and 6 operable units.  
17 And I know what I just said made no sense to most of  
18 you, and it barely makes sense to me.

19 But what I want to tell you is it is  
20 really not important that you understand what PW-1  
21 is versus PW-3 or an operable unit. It is really  
22 not important. What is important is to understand  
23 there is really six groupings of waste sites -- and  
24 they are going to explain this all to you, but I am  
25 trying to give you kind of a preview -- six

1 groupings of waste sites that they are proposing to  
2 do some things at Hanford. There is some plutonium-  
3 contaminated ditches that they are proposing to dig  
4 up. There is some other plutonium waste sites  
5 called low-salt waste group that they are proposing  
6 to dig up as well. There are some pipelines they  
7 are proposing to dig up, and there are some tanks  
8 they are proposing to empty.

9           The things that I think you will probably  
10 find more interesting is the other two waste groups.  
11 One is three different waste sites that have large  
12 amounts of plutonium, and JD is going to talk about,  
13 and the others is going to talk about what the  
14 proposed plan is. The other group of waste sites is  
15 five waste sites that contain cesium, which is also  
16 radioactive material. And they will talk about  
17 those as well. So if you break it down it is kind  
18 of what we are talking about tonight. And hopefully  
19 it all will make sense and come together for you.

20           So our first speaker is with U.S.  
21 Department of Energy. He is the assistant manager  
22 for the central plateau. Correct title? From the  
23 Richland office of Hanford is JD Dowell. JD.

24           **(Brief interruption)**

25           **MR. DOWELL:** I would like to echo the

1 thank-yous for everyone coming out tonight. We  
2 serve the public in our role in the Department of  
3 Energy. We are here to get your input and to hear  
4 what you have to say about what we consider to be  
5 the options that we are presenting for the  
6 remediation of these sites that we are going to talk  
7 about tonight.

8 I want to quickly go through who is here  
9 from the team. It is combined contractor and DOE  
10 team. I have Briant Charboneau here. He is the  
11 FPD, the federal project director for many of these  
12 sites, the groundwater and soil.

13 I have got Bill Burk from the contractor  
14 group. I've got Dale McKenney off to his right,  
15 Sonya Johnson who does communications and community  
16 outreach, Moses Jaraysi, and back at the other table  
17 I have got Paula Call, and I think I have covered  
18 everybody. Am I missing -- no -- Cameron Soloney.  
19 Where's Cameron?

20 That is my group that I have tonight. So  
21 if you have questions, grab one of us afterwards if  
22 the period is too long. We are going to be here as  
23 long as it takes for you to get your questions  
24 answered even after the 9:00 time when we are trying  
25 to achieve finish. I am here with Emmy Laija, and

1 she is going to cover a few of the slides here from  
2 EPA.

3           Before I get started, a brief comment on  
4 what you saw before this. I know Gerry Pollet had a  
5 seminar going in back. Hopefully you had a chance  
6 to look at some of the placards and get the  
7 background information on some of these sites we are  
8 going to talk about. I also courage all of you to  
9 look at the Hanford site story which really kind of  
10 does a good job of wrapping up the size and  
11 magnitude of what we are trying to achieve with the  
12 remediation and cleanup of the Hanford site. In  
13 addition to that, every time I go out and every time  
14 I take any speaker that comes with the Department of  
15 Energy we are going to put out slides of progress  
16 over the last year, and if you haven't had a chance  
17 to go out to the site you probably don't have a real  
18 good concept of it. It is massive, very large and  
19 huge. And we had the slides going at the beginning  
20 of the brief or beginning of the public comment or  
21 open house period just showing that. So I courage  
22 you all to take a look at those things, and I hope  
23 you enjoy them and understand a little bit better of  
24 what we are talking about.

25           So from the standpoint of tonight, I

1 talked about the purpose. We are here for you. We  
2 are here to get comments from you. We are here to  
3 find out what the adequacy of the options that we  
4 are going to show you are and see what you think  
5 about those. We are going to split it out into an  
6 agenda. I am going to talk briefly about the  
7 Hanford cleanup approach and kind of take you from  
8 the big picture down to the areas that we are  
9 talking about and mention remediation tonight. So  
10 hopefully I will go at a level where you all  
11 understand that, and I am not going to move speak  
12 simplistically, but we are going to have to move  
13 through that material fairly quickly.

14           Then we will talk about the actual  
15 operable units which are -- just think of those as  
16 the areas that we are talking about, and you can see  
17 those broken down into 200 CW-5 which is cooling  
18 water -- that is what CW stands for -- and 200 PW,  
19 which is process water, 1, 3 and 6 of the sites that  
20 we are talking about the remediation plans tonight.

21           We will go into some detail on those. I  
22 won't do that now. And, lastly, we are going to  
23 talk about how you can provide that -- provide input  
24 to us and the many ways that we take that input, and  
25 if you don't think we take it seriously, change that

1 paradigm. We are listening to you. I just came  
2 from Seattle last week. Came from Richland last  
3 week and we are here for you. We serve our public.  
4 That is the way I look at it, and we all take that  
5 very seriously. So please give us your input.

6           A brief talk about Hanford cleanup  
7 approach. These things are kind of expensive to  
8 print, but we do have them available in DVD for you  
9 to take tonight. If you want understand how the  
10 Department of Energy and the government is looking  
11 at the cleanup of this place strategically, this is  
12 a pretty readable document, and I encourage you to  
13 look at it so you can understand how we looked at it  
14 and what our strategy is to mitigate this mess and  
15 remediation of these sites that we call Hanford.

16           So that is a pretty good framework. It is  
17 called -- I didn't talk about what it is called. It  
18 is called the Hanford site cleanup completion  
19 framework. And if you can see one of our  
20 communications and outreach personnel, they will  
21 help you get a DVD of that tonight.

22           Looking into the gross area of Hanford,  
23 you probably all have seen this before, but I am  
24 going to kind of briefly cover it. 586 square mile  
25 area north of the city of Richland and the tri

1 cities to the south about 20 miles. If you look at  
2 the green area that you see here, that is called a  
3 Hanford Reach National Monument. Those sites are  
4 being cleaned up as we speak. I am just finishing  
5 those. My division is responsible for that, and  
6 those sites are being shrunk. That footprint is  
7 going to be shrunk this year so that we will finish  
8 final cleanup on the Hanford Reach National  
9 Monument. Sounds like a big deal. It is a big  
10 deal, but those are not very highly-contaminated  
11 sites. That is where a lot of junk was out there.  
12 There was missile sites that they used to protect  
13 the site with, that kind of thing. So that  
14 footprint is shrinking. That is about 290 square  
15 miles, and it includes not only the monuments to the  
16 north but also the Arid Lands Ecology Resort which  
17 is Rattlesnake Mountain. If you have ever been by  
18 that area you will see a big large mountain area in  
19 that part.

20           The next stage is the river corridor which  
21 is shown here in the yellow. It is about 220 square  
22 miles. We are focusing on river corridor right now  
23 because it is close to the river. It makes a lot of  
24 sense. We looked at those fields and the  
25 remediation sites, the buildings, the nine reactors

1 that were used to transfer uranium into plutonium.  
2 Those were along the river because they had to be  
3 close to the river for cooling water. We are  
4 looking at that first so that we remove the risk to  
5 the river as soon as we can. So that is the  
6 strategy here.

7           Next you look at the central plateau, and  
8 that is my area. When you look at the central  
9 plateau, it is broken into two areas. The total  
10 area of 75 square miles broken out into an outer  
11 area that is 65 square miles in the light brown and  
12 an inner area, that reddish brown, of 10 square  
13 miles. Very important concept is that the inner  
14 area is an area that the Department of Energy will  
15 have continuous presence until we remediate and  
16 finish the cleanup. And what that means is that we  
17 will be there as long as it takes to protect human  
18 health and the environment. That is the concept. I  
19 will come back to at the end of the night, but it is  
20 an important concept. That means that as we looked  
21 at the land use of these areas, as we looked at how  
22 the land is going to be used along the river,  
23 eventually we are going to want to see that turned  
24 over to other agencies of the federal government  
25 like Fish and Wildlife, and we are looking at the

1 processes for doing that now.

2 Much different for the industrial area.  
3 The industrial area is ours. We are going to be  
4 there for a long time, and I will talk to you  
5 specifically about how that area was designed to  
6 minimize the footprint to as small as we can make,  
7 and we will talk about that in a second.

8 Last thing I want to leave you with is  
9 think of this as a concentric circle shrinking, and  
10 we are trying to shrink it down to the inner area  
11 footprint. That is what we are all about. We are  
12 all about making that as small as possible  
13 concentrating the material that is going to be there  
14 for a long time in that area so that we can monitor  
15 it and have a long-term presence to monitor it to  
16 make sure that the human health and the environment  
17 is safe.

18 So as we looked at the central plateau  
19 area, there is three areas to it, and when I talked  
20 about the river corridor one of the goals for the  
21 river corridor is we are trying to return that water  
22 to drinking water standards, drinking water  
23 standards. You can pump that water out and drink  
24 it. In the central plateau we are trying to achieve  
25 the same thing, and if we can't achieve it we will

1 continue to pump and treat but we are going to at  
2 all costs stop any plume that exists right there  
3 today from reaching the river. So our goal is to  
4 target trying to get drinking water standard in the  
5 central plateau. If not, we are going to stop plumes  
6 from reaching the river.

7 Those are two very important concepts for  
8 groundwater remediation which is one of the three  
9 strategies for the central plateau.

10 The other one is the outer area which,  
11 again, compared to the inner area is less cleanup,  
12 but that is where you are starting to get into more  
13 of the radioactive sites that we have to remediate,  
14 but it is much less complex than the inner area.  
15 The areas that we are going to talk about tonight  
16 are in the inner area, and that inner area is where  
17 we are going to drill down now.

18 So when I look at the inner area and you  
19 look at the decisions that we came through to get  
20 that inner area, if you think about it as a  
21 progression of decisions, and you can see where they  
22 started. In 1965 Hanford site was still operational  
23 through 1989. Department of Ecology needed a  
24 radioactive waste disposal site, and that was the  
25 first site we established right here. In 1986 naval

1 reactors, not Department of Energy, Department of  
2 Defense needed a place to put burial of submarine  
3 corps, and that was established up in this area.  
4 1992 was the next time we actually started  
5 establishing disposal remediation sites. In 1989  
6 Hanford went to coal operations. We were no longer  
7 operating at that time. We became a cleanup project  
8 at that point.

9           So you can see those decisions and  
10 recommendations came in various times throughout  
11 this, up through 2006, to show exactly how we got  
12 the footprint we have today. Pretty odd looking  
13 footprint, isn't it? It is not a rectangle. It is  
14 not pretty. We call it the soup bowl. I don't  
15 know. You can call it whatever you want, but it is  
16 defined by only those areas that we think we are  
17 going to need to monitor and take custody of long-  
18 term. And, again, it is going to have a continuous  
19 presence there until there is no longer a need to  
20 protect human health and the environment. So that  
21 is a very important concept about the inner area.  
22 We are not going to release it for farming. We are  
23 not going to release the water for irrigation. We  
24 are not going to build condos. That is an area that  
25 we are going to probably, fence and as we talked

1 about before CERCLA will determine inside the final  
2 decision exactly what measures we will take to  
3 protect the public, but there is going to be control  
4 in that area that prevent the general use and  
5 protect not only the public. What I am really  
6 concerned more about is a worker that is in there  
7 that can dig down in the soil. That is really what  
8 we have to protect at that point because that  
9 material is all going to be engineered. The DNF  
10 plates like the ERDITH, the ERDITH disposal  
11 facility. If you don't know what that is, you know,  
12 we will amplify that. But these are some long-term  
13 storage areas that are engineered to be for a long  
14 time. We have to monitor those and have a presence  
15 there as the Department of Energy long time.

16           So as we look at the inner area, I talked  
17 about the argument is that to make it as small as it  
18 is and as small as it can be, but it has that kind  
19 of ugly footprint to it. Is it not perfect. It  
20 might be challenging to manage, but that is really  
21 what we should be doing is minimize the amount of  
22 area that it has. We have the commitment to long-  
23 term DOE presence in that area. When I say long-  
24 term I am talking hundreds of years if not thousands  
25 of years.

1 **MALE SPEAKER:** It's not tens of thousands?

2 **MR. DOWELL:** What's that?

3 **MALE SPEAKER:** It is not tens of  
4 thousands?

5 **MR. DOWELL:** You know, we can go there,  
6 sure, tens of thousands, but it kind of becomes  
7 funny money when we start talking about 10,000  
8 years.

9 But the commitment is going to be as long  
10 as we have to protect human health and the  
11 environment. So if it is 10,000 years, that is the  
12 commitment.

13 Okay. Then as you look into the inner  
14 area approach, some of these decisions are going to  
15 have to be risk based. Risk based means we look at  
16 the risk, and you will see that tonight. We will  
17 assess what that risk is to the public. We will  
18 assess what it is to a co-located worker that is  
19 working in that site, and we will make the decision,  
20 not cheaply, not based on just budget, but a more  
21 kind of holistic balanced approach. And the way  
22 that we get to that is that we meet a threshold  
23 criteria in CERCLA. When we conduct a remediation  
24 and we recommend a proposal for how we are going to  
25 remediate a site, it meets a threshold criteria. It

1 is a balancing criteria is what we call it. And  
2 really it is a very simple process. It looks at  
3 five different areas once we get to the balancing  
4 decision. Long-term effectiveness and permanence,  
5 you know, if it is going to last and be durable, the  
6 short-term effectiveness, well, it is going to  
7 provide the protective measures that are designed to  
8 in the short-term as well; the reduction of toxicity  
9 mobility or volume as necessary, again, to protect  
10 human health and the environment; and implement  
11 ability which means the ability to actually  
12 institute the control, engineer it and deploy it;  
13 and then, lastly, cost. Those are the balances that  
14 we have to look at.

15 It is not overdriven by cost. It is not  
16 overdriven by cost. You know, you all read what is  
17 happening in the American economy, the rescission  
18 and the budget. It is not a good news story for us.  
19 We are not going to live in the means of \$10,000 and  
20 \$100,000,000 there and be able to throw money  
21 around, not that we threw money around in the past.  
22 I am down to the point now where I have to make very  
23 critical decisions at the \$10,000 and less level.  
24 We have always done that. We have always been good  
25 custodians of taxpayer dollars as long as I have

1 been there at least and recent memory, but it is  
2 going to be more acute, as you know, with the  
3 recession, but it is not going to drive these  
4 decisions. These decisions have to be made to  
5 protect human health and the environment.

6 On that note, I am going to turn to this -  
7 - well, actually, I am going to go through the  
8 CERCLA process and then turn it over to Emmy.

9 So the CERCLA process, this is important  
10 because this will kind of drive home why we are here  
11 tonight and why your opinion matters and why your  
12 comments matter.

13 We start with the process of doing a site  
14 inspection. We do personal interviews. We look at  
15 record reviews. We look at the data and the history  
16 of how these sites were developed, how they were  
17 operated. We go into remedial investigation where  
18 we collect all this data. We collect the samples  
19 that we have in place. We determine and get a big  
20 data package of what we think is there. As you look  
21 at those placards and they summarize the materials  
22 that are in these areas, that is what that does. It  
23 actually roles up all that material in the remedial  
24 investigation to kind of give us the information  
25 that we need to make decisions. Then we look at

1 feasibility studies, and this is where we actually  
2 develop our alternatives. We lack at the risks. We  
3 try to balance those risks with the different  
4 alternatives, and then we go through a process, a  
5 CERCLA process, to evaluate those risks.

6           Two years ago we came out to the public,  
7 and we got input from the tribes, got input from the  
8 State of Oregon. We got input from our other  
9 partners of TPA, and we got input from the public,  
10 and we actually made some real changes in the  
11 remediation, the sites we are going to talk about  
12 tonight.

13           So it matters. That is all I am trying to  
14 say from that. Right now we are at the proposed  
15 plan, step three. We are at the time where we want  
16 to select an option, and we have a preferred option  
17 that we are going to present to you tonight, and  
18 then we will take your comments and then go back to  
19 the tri-party agreements and make decisions off  
20 those comments.

21           Lastly, we will get to -- or the next  
22 three steps basically take it to closure. We have  
23 developed a record of decision. It is a record of  
24 decision that we go out, and we are going to  
25 describe our remediation actions. So when we come

1 to that decision and we determine which alternative  
2 we are going to use, it comes into a design and an  
3 engineering process to deploy that action for  
4 remediation of the site.

5           After that we are not done. Again, this  
6 is that long-term stewardship I talked about,  
7 especially in the inner area. As we make these  
8 decisions, we have to revisit the effectiveness of  
9 those decisions in the future. It is a commitment  
10 by law. So it is a legal standard, if you will,  
11 that bears us to this obligation, and that is a very  
12 important concept to understand. We can talk about  
13 the specifics as we get to it later.

14           I will turn this over to Emmy. She is  
15 going to set us up on basically the background of  
16 these areas.

17           **MS. LAIJA:** Good evening, everyone. My  
18 name is Emmy Laija, and I work for the Environmental  
19 Protection Agency. I am the project manager for  
20 many of the waste sites that we are going to be  
21 discussing tonight. I just wanted to take a few  
22 minutes to give you some background information on  
23 how these waste sites became contaminated.

24           So the waste sites are located in the  
25 inner area. That is a central area in the dark red

1 colors. The inner area is basically divided in two  
2 halves. We have the 200 west area, which is on the  
3 left-hand side of the inner area, and then the 200  
4 east area, which is where the cesium contaminated  
5 sites are. The ones at 200 west are the sites that  
6 are contaminated with plutonium. I will talk a  
7 little bit more about that in a second.

8           So let's take a closer look at the inner  
9 area, what else is going on there. There is  
10 numerous waste sites located there. Tonight we are  
11 looking at 21 waste sites.

12           As I mentioned, the ones in 200 west are  
13 the plutonium-contaminated waste sites, and the one  
14 thing with the inner area, as JD mentioned, it is a  
15 different type of cleanup that we are doing here.  
16 We are looking at an industrial cleanup. So that  
17 makes it unique to Hanford. This is one of the  
18 first decisions that we will be making in this area  
19 that has industrial cleanup standards. So that is  
20 one thing to keep in mind when we are discussing the  
21 cleanup alternatives later on tonight.

22           One thing, JD hinted at this. We are  
23 looking at soil-contaminated sites. There is also  
24 contaminated groundwater at Hanford that is located  
25 beneath where these sites are located. That is

1 being remediated under different decisions. We are  
2 currently constructing the 200 west pump and treat  
3 system. It's the nation's largest pump and treat  
4 system which will be sucking up contaminated  
5 groundwater, treating it and then reinjecting the  
6 clean water back in into the groundwater. So there  
7 is other cleanup actions that are going on to  
8 address contamination in the area. We are looking  
9 at a small piece of it tonight.

10           So let's go ahead and see what these waste  
11 sites are. There is 21 waste sites, and this  
12 graphic here is depicting how they became  
13 contaminated. In that central part of Hanford we  
14 had processing facilities where plutonium was  
15 processed, and those activities generated large  
16 amounts of liquid waste which was disposed of in the  
17 soil.

18           So with these 21 waste sites, we grouped  
19 them into operable units, which is kind of  
20 confusing. 200 PW-1 has no meaning to anyone just  
21 hearing that phrase for the first time. So we  
22 looked at the waste sites and said how can we group  
23 these better? What are the similarities between  
24 them? So we divided them into waste groups based on  
25 the type of waste they received, and then with the

1 similarities between those waste sites we were able  
2 to look at cleanup alternatives that we could apply  
3 across the waste group. So these are similar.  
4 Ideally the same type of cleanup approach would be  
5 applicable to all of these waste sites. So we broke  
6 them down, and some of the waste groups are listed  
7 here.

8           This first little shape on the bottom is  
9 looking at the Z ditches and the low-salt waste  
10 group. So these waste sites received liquid waste  
11 that was contaminated with plutonium and americium.  
12 So these sites we are looking at things like ditches  
13 or cribs or trenches where the liquid was disposed  
14 to.

15           In these cases the waste didn't travel  
16 that deep into the soil column. In the Z ditches it  
17 went down about 15 feet below ground surface. For  
18 the low salt sites, it went down to about 25 feet.  
19 So it didn't travel too far down into the soil  
20 column. However, for the high-salt waste group,  
21 which is the third little graphic on the bottom  
22 here, this was highly acidic, and that allowed that  
23 wastewater to travel down into the soil column to  
24 about a depth of 100 feet below the surface. So  
25 that makes those high salt sites unique.

1 We know there is a lot of interest around  
2 these sites. So we will be interested in hearing  
3 about what you have to say about cleanup of those  
4 sites in just a little bit. But, again, those stand  
5 out from the other waste sites we are looking at.

6 We also have tanks in the PW-1 and 6  
7 operable units. There is two tanks overall, and  
8 these tanks were used to collect solid when  
9 wastewater was discharged. Think of it as an old  
10 septic system. You flush the toilet; the solids are  
11 separated into a tank and then the dirty water is  
12 discharged into the soil usually over bed of gravel  
13 or tile or something similar.

14 So that is a very simplified version of  
15 what happened here, but it is the same general idea.  
16 So that is what is in the tanks, sediments  
17 contaminated with plutonium and americium from the  
18 activities that were occurring when we were  
19 processing the plutonium.

20 The next waste group is the cesium-137  
21 waste group. Those were located separate from the  
22 west and 200 east and here the waste contaminated  
23 with cesium traveled to a depth of about 28 feet or  
24 so.

25 We had two other sites that we are not

1 really discussing tonight. We tested them. We  
2 found that the risk levels there were not a threat  
3 to human health and the environment. So there was  
4 not a remedial alternative identified for those.

5 And I will go ahead and hand it back to JD  
6 so he can talk about the alternatives we evaluated  
7 for these waste sites.

8 **MR. DOWELL:** That is a really good  
9 background.

10 And Ken talked about six areas. This is  
11 the first of six areas, and we are basically going  
12 to go through these. I hope we have a handout  
13 because the handout is fairly self-explanatory.

14 First is the current 200 cooling water 5  
15 area. This is a good picture of that. It shows, if  
16 you look at the back map, these are very long  
17 trenches. One goes up to 4200 feet. This actually  
18 shows normal salt for the trenches that we are  
19 talking about in that area. Not a very clamorous  
20 photo, but that is what we see out there, and that  
21 is how we looked at these fields every day, and we  
22 don't really determine much from that, but it does  
23 show you and kind of characterizes what is out there  
24 now, and you can see what it was designed to be  
25 earlier.

1           These are pretty shallow open ditches.  
2 They are known as Z ditches. They are very  
3 rudimentary in their design. Some of them were just  
4 ditches in the ground. Some were engineered. Some  
5 have French pipes, as Emmy talked about, the  
6 different kind of configurations.

7           I kind of find it fascinating that there  
8 were so many variations out there. It is not a  
9 really a good thing because it seems like it was  
10 somewhat an undisciplined process, but they were  
11 looking at different technologies at the time to get  
12 the stuff in the soil, and that is what it was all  
13 about at that time.

14           There was a tile field and an unplanned  
15 release site. Unplanned release site sounds really  
16 bad, but actually it was a site where they got too  
17 close to one of the trenches that existed and  
18 decided that they couldn't use that but still used  
19 it and then moved and did another trench. So it was  
20 just a site that we found or knew about that  
21 actually wasn't a complete trench but ended up being  
22 used in that manner.

23           Again, these received cooling water from  
24 the plutonium finishing plant. It also received it  
25 from the Z plant. So if you see a Z or a PFP, it is

1 the plutonium finishing plant where we did the final  
2 processing of the material before it was weapons  
3 grade.

4           The contamination is located primarily at  
5 and below the bottom of the trenches. So most of  
6 these fields are fairly shallow, shallow being less  
7 than 15 feet or shallower, and the primary risk  
8 drivers were, as you can see, americium, plutonium,  
9 cesium and radium.

10           When we looked at the remedial  
11 alternatives, CERCLA by law describes us to look at  
12 these, for instance, the no action option where we  
13 don't do a thing. We always look at that option as  
14 a base. We looked at maintaining the existing soil  
15 cover with institutional controls, which is not  
16 doing anything but making sure people can't dig it  
17 up. It's making sure we have a fence around it, if  
18 you will.

19           Remove, treat, as needed, and dispose --  
20 RTD is the acronym for that -- where we actually  
21 remove the soil that is contaminated, backfill with  
22 clean soil and remove the contaminate from the  
23 ground and then process it to the appropriate waste  
24 site.

25           Engineered surface barriers, and you know

1 that surface barriers are what it sounds like. It  
2 is basically a way to provide a barrier on top of  
3 the material, stays in the ground, that prevents  
4 water from penetrating the soil and acting as a  
5 motive force for driving that material back down  
6 deep into the water column.

7 Again, job one: Do not let this stuff get to  
8 the water column. Do not let it get into  
9 groundwater. That is exactly what we are trying to  
10 achieve here. That is what we are trying to make  
11 long-term in our decision process with these  
12 alternatives.

13 The next one is in-situ vitrification.  
14 Vitrification is a fancy word for glass. So  
15 basically what this does is it puts electrodes into  
16 the ground. Between 30 and 40 feet I think is the  
17 maximum extent you can do this to. It drives an  
18 electric charge through these electrodes on opposing  
19 field and it actually vitrifies the soil, turns it  
20 into glass to hold the material in the soil.

21 So there is some question about  
22 effectiveness of that, but it is an option, a  
23 definite option.

24 The last thing we looked at, a combination  
25 of alternatives. For this decision we are -- our

1 proposed alternative is to remove, treat and  
2 dispose. So we are going to remove the contaminated  
3 soil. I talked about about 15 feet. We will treat  
4 it as necessary and then take it to the appropriate  
5 disposal site. That is either ERDITH, on the site  
6 low enough or it is true. True waste goes down to  
7 the waste isolation pile plant down in New Mexico,  
8 WIPP.

9           So that was the first area. Now, for this  
10 slide this gives you a general overview of the five  
11 areas that we are going to talk about. Ken talked  
12 about those as well.

13           There is 16 engineered liquid waste  
14 disposal sites in 200-PW-1, 2 and 3. They are  
15 broken down into these five types of areas, and they  
16 are not all grouped in the same. For instance, we  
17 have high salt, low salt. We have settling tanks  
18 which is a geometry problem to dispose. We have  
19 cesium-137 which is a specific radionuclide of  
20 concern, and then we have other sites, which is kind  
21 of a miscellaneous site that we have grouped  
22 together because the remediation is the same.

23           These were just Hanford site operations to  
24 introduce how to dispose of plutonium-contaminated  
25 water. It was just kind of stepping grounds, if you

1 will, and the primary risk drives are plutonium,  
2 americium and carbon tetrachloride.

3 Lastly, the current PW site is the only  
4 one that we really focus on with cesium-137. It is  
5 a little too early.

6 I am going to go through these  
7 alternatives and what we looked at. The only  
8 difference between this and the other list, we have  
9 the no action alternative. The second one is a  
10 little bit different. We maintain or enhance the  
11 existing soil cover, and that means that we are  
12 adding material on top of it to enhance a barrier to  
13 prevent access to that material or give it a higher  
14 stand-off to protect workers.

15 We have an engineered surface barrier as  
16 we have talked about. We have in-situ vitrification  
17 as an option, as we have talked about.

18 We have remove, treat and dispose, as we  
19 talked about.

20 And, lastly, we have soil vapor  
21 extraction. This is a highly effective means of  
22 extracting carbon tetrachloride. So we basically  
23 just put a vacuum on the ground, and we pull out the  
24 vapor. It is vapor form, and then we basically  
25 condense it. So that we are pulling out that carbon

1 tet and constantly pulling it out of the soil with  
2 the vacuum. It is pretty simple technology. It is  
3 highly effective because in the right conditions  
4 carbon tetrachloride does get into a vapor form, and  
5 it is effective relative to the other ways we  
6 mitigated, which is pump and treat.

7           So as we look at preferred alternatives,  
8 we are going to start with one group, the high-salt  
9 waste group. We looked at the high-salt waste  
10 group. Emmy talked a little bit about the way that  
11 it fused into the ground. It is a significant  
12 concern up to 110 feet into the ground. Right now  
13 we looked at that, and we say it is clearly that the  
14 plutonium that we assessed to be stable. I will  
15 talk about what that means in a second.

16           Our alternative, however, looks like  
17 continuing to operate the soil vapor extraction  
18 system. We are going to excavate the highest  
19 concentrations or at least -- let me correct that.  
20 We are going to excavate to two feet of this  
21 material. We are going to excavate two feet of the  
22 contaminated soil after we remove the structure. So  
23 in this case it takes it to about 22 feet in the  
24 ground is how much we are going to remove.

25           Then we are going to remove and dispose of

1 that material and the structures as necessary and  
2 take it to the appropriate fill. We are going to  
3 backfill the excavated area with clean fill, clean  
4 fill. We are not mixing anything or anything like  
5 that. Clean fill gets backfilled into what we  
6 excavated, and then we are going to construct one of  
7 those evapotranspiration barriers over the site.  
8 This is engineered barrier, and this is designed to  
9 basically provide a plant cover or some kind of  
10 cover that actually allows the water to evaporate  
11 naturally from the top of that field after we  
12 engineer a barrier, and it has got an impermeable  
13 membrane underneath that that prevents the water  
14 from, again, getting into the ground and driving  
15 that material at all. So if there is no motive  
16 force, the material remains stable.

17 **MR. NILES:** JD, if I can speed you up here  
18 because we are already over time.

19 **MR. DOWELL:** Okay. The others are less  
20 complicated.

21 The low-salt waste group, we are going to  
22 remove the significant portion of plutonium  
23 contamination, and we are basically going to do an  
24 RTD, remove, treat and dispose. We are going to  
25 apply the evapotranspiration barrier. On the low-

1 salt waste group, that material, again, is fairly  
2 shallow. It didn't penetrate deeply into the soil.

3 The current PW-3, which is the cesium-137  
4 waste group, we are going to maintain and enhance  
5 the existing soil cover to assure waste sites are at  
6 least 15 feet below the ground, and that is all we  
7 are doing for that site. That alone is it.

8 For 200 PW-1 and 200 PW-6, these are  
9 settling tank waste groups. We are going to take  
10 the material out of those tanks, stabilize it and  
11 dispose of so. So it is RTD of the material in the  
12 tank, and our plan is to grout that tank in place,  
13 and that will hold that tank and whatever remains in  
14 that tank in place in the ground.

15 And, lastly, for 200 PW-6, other waste  
16 sites, there is no action required on these because  
17 we don't have -- we just can't find the material  
18 there. And Z-8, the French drain in Z-10, injection  
19 reverse well, the soil concentration -- the  
20 contamination concentrations are below risk. So  
21 there is really nothing to mitigate at this stage.

22 So how you can provide comment? We are  
23 here tonight to take your comment personally. You  
24 can provide verbal comments, provide comments now on  
25 paper. There will be a Q and A session that we will

1 get to here in less than minute, and you can also  
2 submit written comments to that website or that  
3 address.

4 We are going to go back to the tri-party  
5 agreements probably within two weeks and assess the  
6 comments. We will look at every comment. We will  
7 have an analysis done on every comment that we hear,  
8 and then we will come to the decision, and we expect  
9 that decision to be made by the end of September.

10 Thank you.

11 **MR. NILES:** Thank you, JD.

12 And I know Emmy wants to provide just a  
13 brief comment on EPA perspective on these  
14 alternatives.

15 **MS. LAIJA:** Yeah, I am just going to take  
16 one minute.

17 With EPA when we look at these  
18 alternatives we are looking to see if the  
19 alternatives that are being proposed are protective  
20 of human health and the environment. So that is  
21 what we look at with these alternatives, and we  
22 determined that, yes, they are considered protective  
23 of human health and the environment.

24 However, we are very interested in hearing  
25 what you have to say about the high-salt waste

1 sites. We know, there is a lot of energy on those.  
2 We welcome that feedback. Your input does have a  
3 direct effect on the decisions we are going to make.  
4 So I encourage you to share your comments with us.

5 And I am also interested in hearing on the  
6 cesium waste group. We are proposing bringing in  
7 backfill to maintain a 15-foot depth of cover over  
8 those waste sites, and that is a new approach. We  
9 don't typically bring in backfill to put over a  
10 waste site. So any feedback you have on that part  
11 of the cleanup decision as being presented here  
12 would be very helpful as well. Thank you.

13 **MR. NILES:** Thank you, Emmy.

14 I am going to step out of my role briefly  
15 as moderator and give you just a couple minutes on  
16 the State of Oregon's perspective on this cleanup.

17 If you haven't seen them, there is a copy  
18 of our comment letter out there. In my early  
19 comments I mentioned, you know, the first four  
20 groups of sites that were removing, we are fine with  
21 those. So I am going to limit my comments just to  
22 the high-salt waste, which is the plutonium sites  
23 and the cesium sites, and tell you what our  
24 perspective is.

25 Before I do that, I should say that we are

1 very pleased that through this four-and-a-half-year  
2 process that we have been involved with in  
3 commenting and reviewing these documents and as they  
4 brought them out to the public, they have made some  
5 dramatic changes. We are really pleased with the  
6 distance that the tri-parties have come in our view  
7 in terms of what they are proposing to do. A couple  
8 of these areas though we are still a little  
9 uncomfortable.

10 Our position on the cesium sites, I think,  
11 is probably going to surprise you because our  
12 position is that we are willing to accept the cesium  
13 to stay in there. And the reason that we are doing  
14 that is really to be consistent with our technical  
15 analysis is, and that is the chemistry in the soil  
16 and how contaminates move or don't move within the  
17 soil at Hanford.

18 So the operative reason, or the same  
19 consistent reason, if you will, our perspective is  
20 from Oregon's perspective is the soil chemistry at  
21 Hanford can allow certain forms of plutonium to  
22 move. So we have concerns about the high-salt waste  
23 group I will talk about in a second.

24 With cesium the soil chemistry is such  
25 that that cesium does not move. We are very

1 confident that the cesium does not bind, and so we  
2 are willing to accept the proposal to leave it in  
3 place to allow the cesium to decay so long, as JD  
4 mentioned, that the Department of Energy can  
5 guarantee a presence on the surface to protect those  
6 sites to allow that there is not fertilizers, for  
7 example, that go on there because they can  
8 remobilize the cesium. That is what our position on  
9 the cesium is.

10           On the high-salt waste sites, we are very  
11 concerned about excavating just two feet further.  
12 There doesn't appear to be any real rational basis  
13 for that in our view. We can't find it in the  
14 documents. It isn't you will get 85 percent of the  
15 plutonium out with two feet. We don't know what the  
16 percentage is.

17           And what we are recommending is the  
18 observational approach it is called where you begin  
19 to dig your sampling as you go. If you still have a  
20 lot of plutonium, you keep digging. If you run out  
21 in two feet, in five feet, in ten feet or 20 feet,  
22 wherever it might be, that is where you stop. You  
23 don't just arbitrarily pick two feet.

24           So that is the State of Oregon's  
25 perspective. I hope you will take a look at our

1 letter and that will help you in determining all  
2 this.

3           So I am sorry we are running late in terms  
4 of our schedule. We have got a lot of folks that  
5 joined us since we did our opening comments. We  
6 last want to hear from a local perspective, which is  
7 going to be shared by Columbia River Keeper, Dan  
8 Sherrer, and Gerry Pollet of Hearts of America  
9 Northwest, and we will try to clarify and answer any  
10 questions that we might have confused you about so  
11 far.

12           So, Dan, thank you.

13           **MR. SHERRER:** First thing I want to say,  
14 if anyone hasn't found our handout yet, we have sort  
15 of talking points and information about this, this  
16 process on our table over there. So raise your  
17 hands if you don't have one, if you want one, and we  
18 have got folks that will go around and give it to  
19 you. They also help give you information on how to  
20 comment formally online.

21           Columbia River Keeper has a pretty starkly  
22 different view of what is a protective approach  
23 particularly for the plutonium issues. We disagree  
24 with both Department of Energy and the Environmental  
25 Protection Agency about whether leaving a large

1 amount of plutonium in the ground is protective of  
2 the public and the environment in the long term.

3 Plutonium has a half life of 24,000 years.  
4 That is a pretty difficult place to start from when  
5 you are talking about leaving large volumes of this  
6 in the ground. We are not -- our position is not  
7 controversial. In fact it is the consensus from a  
8 broad range of regional interest that this approach  
9 is not acceptable.

10 The Hanford advisory board, which includes  
11 government agencies, tribes, conservation groups,  
12 watchdog groups like Gerry from Hearts of America  
13 Northwest. The consensus conclusion is that the  
14 Department of Energy needs to get as much plutonium  
15 out of the ground as possible. Stopping at two  
16 feet, which would leave an estimated 50 percent of  
17 the plutonium in some of these sites, is simply not  
18 adequate.

19 The assumption that this would work, that  
20 leaving this plutonium in the ground, would be  
21 protective rests on a few key elements, many of  
22 which we think are flawed.

23 First of all, plutonium will not move.  
24 That is the first assumption. That rests on the  
25 idea that plutonium will not be mobile, that the

1 geology of the area is stable. We are talking  
2 geologic time here. A half life of 24,000 years,  
3 roughly you think ten half lives that is mostly  
4 gone. That is 240,000 years.

5 That the caps will be effective, that is  
6 another big assumption. That the engineered  
7 evapotranspiration barriers will work over this time  
8 frame, another big assumption, and, you know,  
9 essentially that, you know, the funding, the effort,  
10 to keep this site off limits will be stable for the  
11 length of time that this stuff will be dangerous.

12 So we talking about material in the soil  
13 that is going to be dangerous for tens of thousands  
14 of years, and that is, to us, the crux of the issue  
15 in terms of plutonium.

16 The idea that there will be continuous  
17 presence on this site to protect the central  
18 plateau, it just doesn't add up. When you think  
19 about 14,000 years ago, the Mazola floods were  
20 breaking through the Columbia basin, huge walls of  
21 water repeatedly sweeping through this area.

22 From the River Keeper's perspective, we  
23 are aware that the Columbia river has a turbulent  
24 geologic history. You know, just a couple weeks ago  
25 we were paddling down along the White Bluffs. Those

1 bluffs contain all kinds of fossils that you would  
2 never imagine would be in these places. So we have  
3 to think on a different time scale than we are  
4 talking about tonight.

5 I am going to give this to Gerry in just a  
6 second here, but fundamentally the idea that  
7 plutonium is going to be stable is unreasonable.

8 At the state of the site meetings, we  
9 heard from Department of Energy a sentiment that we  
10 really agree with, and that was cleanup is not  
11 discretionary. This is not something we get to choose  
12 whether to do or not. This is a moral  
13 responsibility that was conferred about our  
14 generation by decisions that were made long ago to  
15 go and produce large amounts of plutonium.

16 We would go a step further and say  
17 thorough, effective cleanup is not discretionary.  
18 Leaving large amounts of plutonium in the ground at  
19 these high-salt waste sites is just simply not going  
20 to work.

21 The alternative range, part of the reason  
22 that they come to the conclusion that it is too  
23 expensive to go further is that there is a big gap  
24 between going two feet and the next alternative is  
25 to go many dozens of feet below that. And so, like

1 Ken pointed out, does going 10 feet get you 90  
2 percent? Does going 13 get you 95 percent? Then  
3 that is probably worth it. We don't have that  
4 information. It is not disclosed in the plan. And  
5 so we need more from the Department of Energy to  
6 justify leaving any of this in the ground.

7 I will sort of close by saying that we  
8 have given input before on this issue. The Hanford  
9 advisory board, many people in the public have  
10 repeatedly argued for thorough cleanup. We will do  
11 it again if we have to, but we are asking DOE to  
12 pull this back and take a harder look at the  
13 plutonium.

14 And I want to pitch it to Gerry. He is  
15 going to talk about some of the other troubling  
16 aspects of this.

17 **MR. POLLET:** Gerry Pollet with Hearts of  
18 America Northwest.

19 I want to thank you all for coming  
20 tonight. It is really important that you are here.  
21 Without your voice this would not be a cleanup. It  
22 would be a coverup, as you heard. Coverup of 15  
23 feet of dirt and walk away. So it is really  
24 important you are here.

25 Just how much plutonium there is in the

1 soil in the central plateau sites, 562 kilograms in  
2 the sites we are talking about tonight. That is  
3 their estimate. It is actually not a very firm  
4 estimate. That is enough plutonium to make 70  
5 nuclear bombs. When we are done there is still  
6 going to be dozens of nuclear bombs' worth of  
7 plutonium in the soil if we don't require them to  
8 clean it up.

9           But it is not just plutonium. It is the  
10 cesium. It is vast amounts of chemicals. You heard  
11 about soil vapor extraction. Sounds great, but the  
12 thing here is that is like sipping -- using a straw  
13 to try to clean up the Columbia River, because if  
14 you don't get the stuff out of the dirt, the stuff  
15 that's mobilized into the gas vapor is miniscule  
16 compared to what is in the dirt.

17           We are going to skip over repeat slides  
18 here.

19           Here is a picture of the Z-9 trench. Just  
20 to give you a sense of the size of this, that  
21 concrete cover over that trench is 120 feet wide.  
22 There is enormous amounts of plutonium in here, and  
23 the plutonium in 1979, the last time they did any  
24 sampling, was 120 feet below the site, and they are  
25 only going to dig out two feet below it.

1           And massive amounts of powerful solids.  
2 These solvents were chosen to be used in plutonium  
3 processing operations. Because why? They were damn  
4 good at mobilizing plutonium.

5           And the other thing to bear in mind about  
6 the Energy Department's promises to be there  
7 forever, the Energy Department was dumping these  
8 untreated liquid wastes straight into the soil as  
9 late as 1995, not very long ago. It was illegal to  
10 dump untreated liquid waste 20 years before that,  
11 and they kept doing it. They were not good  
12 stewards, and the idea of trusting them when their  
13 budget priorities to make more nuclear waste and  
14 more nuclear weapons and to send the waste care to  
15 be buried at a national radioactive waste dump is  
16 not something I would like to bet our children's  
17 future on.

18           This trench is about two miles long, these  
19 trenches. In 1959 this is where they tested. Now,  
20 you heard this CERCLA process. We do a remedial  
21 investigation. We would like to know where the heck  
22 that investigation was, EPA, State of Washington,  
23 Energy Department, because what they looked for in  
24 1959 was whether or not they put so much plutonium  
25 into the ground that they would have a self-

1 sustaining nuclear reaction, and 1979 they looked  
2 again, but they were only looking for plutonium.  
3 They weren't looking at the chemicals. They didn't  
4 care what chemicals they put in the ground back  
5 then. They were continuing to dump liquid waste  
6 without treating it into these trenches for another  
7 16 years.

8           And so here is what they did in the last  
9 decade. One spot, a spot, a bore hole. That was  
10 that. On that basis we should say the waste  
11 contaminants haven't moved since 1979. Not  
12 reliable, and we believe the same thing is true in  
13 terms of old waste sites. They need to be dug up,  
14 not put under 15 feet of dirt.

15           How many of you have stood at the edge of  
16 a large construction site for an office building and  
17 looked down into the pit? Everyone here has done,  
18 that, looked down into the pit 40, 50, 60, sometimes  
19 a hundred feet deep. So you know you can excavate a  
20 hundred feet. It is not that costly. It ain't  
21 rocket science. You can do it. So what's the  
22 problem?

23           The problem is the Energy Department is  
24 under a rule that says you are supposed to send  
25 plutonium to a deep underground repository. There

1 is only one. It is a salt mine in New Mexico, and  
2 it is going to run out of room if they sent all the  
3 plutonium there. So it is expensive. They say  
4 maybe we will blend the average over a large area,  
5 and we will send it to the SuperFund cleanup site in  
6 the middle of Hanford, but it is still plutonium,  
7 and it should go to a deep underground repository.

8 **MR. NILES:** Gerry can I get you to wrap  
9 up, please.

10 **MR. POLLET:** Just a few slides.

11 This is the Energy Department's proposal  
12 for the cleanup standard on the central plateau for  
13 plutonium. 2,900 picocuries per gram. This is what  
14 they are being required to cleanup to in California  
15 at Lawrence Livermore National Lab, two and a half  
16 and ten, a thousand times greater level of  
17 plutonium.

18 So even along the Columbia River this is the  
19 level that EPA required them to clean up plutonium  
20 to. If you use 2,900, you look underneath the  
21 pipeline or a trench, and you say: "We don't need  
22 to dig up any further. We are at our cleanup  
23 standard."

24 So what we are suggesting in the way of  
25 comments, insist that these sites be dug up. It

1 ain't rocket science. It is a cleanup, not a  
2 coverup.

3 Secondly, the plutonium that is dug up  
4 needs to go to a deep underground repository, not  
5 put back into surface landfill.

6 Thirdly, don't ignore the fact that the  
7 plutonium has already spread, and in fact the irony  
8 of this cleanup plan is that the most -- the site  
9 with the most mobile plutonium is the one where they  
10 only want to dig up two feet instead of going after  
11 the deeper plutonium that the solvents have already  
12 mobilized and headed towards the groundwater. And  
13 urge them to adopt a cleanup standard for plutonium  
14 that's similar to the one used in California or at  
15 least the one used along the Columbia River except  
16 we actually have to clean up and leave.

17 Thank you very much for coming here.  
18 Please remember to give comments on the record when  
19 they open up the record to take comments, and use  
20 our facts sheets from both organizations to mail in  
21 more comments. Share our E-mails with all your  
22 friends on Facebook and ask them to send in  
23 comments.

24 Thank you.

25 **MR. NILES:** All right. Thank you to all

1 of our speakers.

2 We want to take a few minutes if there are  
3 some questions that came up in terms of needing  
4 clarification. We are still going to have the  
5 comment period. So I would like to really  
6 distinguish questions versus comments.

7 All of this I should mention is being  
8 recorded by our court reporter. So we are going to  
9 ask you to raise your hands for the Q and A so we  
10 can get a microphone to you and make sure she can  
11 hear you.

12 And Sonya you are going to be running the  
13 microphone around?

14 **MS. JOHNSON:** I am.

15 **MR. NILES:** We will have that to you in  
16 just a minute. And then once we start the public  
17 comment, we are going to put a microphone on the  
18 stand so people can come up and do that.

19 So questions, if there is some  
20 clarification needed, and we have got quite a few.

21 **FEMALE SPEAKER:** My question is to the  
22 gentleman that was talking about the trenches, and  
23 he said there was this trench and that trench, and  
24 then there was in kind of sort of trench.

25 So could you be more specific about the

1 kind of sort trench.

2 **MR. DOWELL:** The point of the comment I  
3 was making about the trenches, cribs, structures  
4 that used to dump this material is that there is no  
5 standardized way that they did it. And if you look  
6 at the placards back there, you can see a couple of  
7 the examples on what a crib is versus a trench.

8 Some of these trenches were just furrowed  
9 into the ground. Like think of a farmer going there  
10 and making a furrow and make it put water in it.

11 Others were engineered like a French drain  
12 system similar to a septic field where you had a  
13 perforated pipe and the material went through that  
14 and then it got dispersed into a field of gravel so  
15 it disbursed into the ground.

16 So I am not trying to make a big shell  
17 game about, you know, a trench or a crib or the  
18 different types of trenches. The point is that is a  
19 very rudimentary geometry that these in.

20 Do you a comment, Dennis?

21 **MR. FALK:** Well, I think the specific  
22 question, JD, is unplanned release. You were  
23 talking about the waste site that wasn't the  
24 unplanned release.

25 **MR. DOWELL:** The unplanned release site on

1 200 CW-5, which was the first site I talked about.

2 I know memory won't serve. This kind of gets  
3 confused if we talk about it a lot.

4 That site, which is the one that Gerry  
5 showed up that shows you two miles of trenches,  
6 those are very rudimentary trenches. Some of them  
7 were engineered a little bit differently, but they  
8 are all basically the same. They are just basically  
9 trenches in the ground with a gravel liner on the  
10 bottom to disburse that material into the ground as  
11 efficiently as possible.

12 So when we talked about the unplanned  
13 area, what they did is they were going out to dig  
14 another trench, realized they were too close to an  
15 existing trench; ended up using that trench a little  
16 but ended up calling it an indeterminate area like  
17 that because they didn't have anything else to call  
18 it at the time. It is known as a graph. We know  
19 where it is.

20 **FEMALE SPEAKER:** So they just jumped it  
21 without anything; is that right?

22 **MR. DOWELL:** Correct. Well, they were  
23 trying to create a trench there, and then they used  
24 it, then didn't fill it in. They felt they were too  
25 close to the other one. So that kind of gives you

1 an idea what those 200 CW-5 areas are.

2 Now, the areas that Gerry did show you,  
3 the large trench two miles, that area is going to be  
4 RTD, remove, treat and dispose. We are not leaving  
5 any of that material in the ground in 200 CW-5, and  
6 we are going to treat it according to the normal  
7 methods we that use. We will go down to the levels  
8 where we retrieve that material and make determinate  
9 studies that we sample and retrieve that material to  
10 make sure we are getting it.

11 **FEMALE SPEAKER:** I thought, all these  
12 meetings we went to, I thought all of that stuff was  
13 supposed to be vitrification. It was supposed to be  
14 turned into glass so you can ship it off somewhere  
15 else.

16 **MR. DOWELL:** Yeah. I mean I will give you  
17 some background on that. It might be a little  
18 confusing. So bear with me.

19 The sites that we are talking about  
20 tonight are burial sites. So there were places  
21 where they took process water and cooling water and  
22 just dumped into the ground. The sites that you are  
23 talking about is the tank farms, which will hold  
24 about 53 million gallons of water of mixed waste  
25 right now. And also all the water has actually been

1 pulled out of those tanks. So they are really  
2 stabilized now. But those tanks are all the material  
3 that is going to be vitrified by the large waste  
4 treatment plant that is being built to vitrify the  
5 waste with a high level of waste going to a  
6 repository to be determined.

7           You know, we can call it Yucca, but I am  
8 not sure what it is going to be. It is going to be  
9 a repository somewhere. And that is where all true  
10 waste will go. So if we find true waste and it goes  
11 to a repository, WIPP. WIPP has got the capacity  
12 that they haven't even determined yet, and I can't  
13 talk too much about WIPP, but WIPP doesn't have a  
14 limited capacity. It has got a capacity today, but  
15 if we don't find alternatives the Blue Ribbon  
16 Council that is designed to do that by President  
17 Obama, it is going to -- I think the draft comes out  
18 this week, as a matter of fact.

19           They are talking about the options for a  
20 long-term repository for not only commercial nuclear  
21 energy but our true transient long-term waste as  
22 well. So not to confuse everyone, but that waste is  
23 going to go get vitrified that is coming out of  
24 those tanks, not out of the ground.

25           **MR. NILES:** We have a lot of other

1 questions, and if we are going to need to -- if we  
2 can't make the question and answer concise -- I know  
3 it is difficult and it is convoluted.

4 **MALE SPEAKER:** You referred to remove,  
5 treat and dispose. I would like to hear more about  
6 what that appropriate disposal is.

7 Also, I am assuming in the treatment  
8 process that that is -- I don't know if you could  
9 briefly mention that. I am assuming it is not going  
10 to be toxic intervals involved in that process.

11 And also it seems relevant to this issue  
12 that I have been hearing about a proposal for vast  
13 amounts of more waste from other sites, both  
14 existing processing from nuclear power plants and  
15 waste from proposed plants in the future equaling to  
16 what I have heard to be four semi trucks a day every  
17 day for the next 20 years to be shipped to Hanford  
18 and how this is going to be planned to be disposed  
19 of in the appropriate disposal.

20 What is this appropriate disposal methods  
21 that you are talking about?

22 **MR. DOWELL:** Well, I will talk quickly to  
23 the first question, RTD.

24 For remove, treat and dispose, the dispose  
25 either goes to a long-term repository like WIPP,

1 waste isolation pilot plant in New Mexico.

2 **MALE SPEAKER:** Or shipped to Texas?

3 **MR. DOWELL:** Or Yucca, if Yucca ever  
4 opens, or something like Yucca if they find  
5 something in Texas or somewhere else. There is a  
6 lot of things the Blue Ribbon Council is looking at.  
7 So if it reaches the threshold of true, that's where  
8 it goes. It doesn't stay in the State of Washington  
9 unless it is interim until a repository is  
10 available. I can almost tell right now that once  
11 the waste treatment plant starts making glass, we  
12 are going to have to hold the waste here until we  
13 find a repository.

14 The material comes out of the ground that  
15 we find if it hits the threshold of true, it goes to  
16 WIPP. And the processing we are talking about is  
17 the separation process. It is not chemical. It is  
18 mechanical. We do it with a, you know, radiography,  
19 basically X-rays that look at the material, or we do  
20 it with sourdine. There is different mechanisms of  
21 sourdine material that comes out of the ground, and  
22 right now I don't know if any chemical process we  
23 are using. There is none that we know off.

24 **MR. NILES:** But in terms of treatment,  
25 there could be thermal treatment, if there is a

1 chemical. There could be grouting to solidify it.

2 I mean there are other mechanisms.

3 **MR. DOWELL:** Right. What we do do is  
4 stabilize so it can go to burial. We can grout it.  
5 We can thermally treat it to extract some of the  
6 materials that will vapor, but, again, those are all  
7 controlled. It is not released in the environment.  
8 We are not creating more of a mess by cleaning up  
9 the mess. I guess that is the general gist of our  
10 strategy on that.

11 **MR. NILES:** Last question.

12 **MALE SPEAKER:** So the high-level waste  
13 that you are proposing bringing in, so you are just  
14 going to --

15 **MR. DOWELL:** He is going to answer that  
16 one.

17 **MR. NILES:** We are going to --

18 **MALE SPEAKER:** Let me just -- okay. Just  
19 because --

20 **MR. NILES:** You know, we can off in our  
21 discussion on all kinds of topics, and that's fine.

22 **MALE SPEAKER:** Appropriate disposal. That  
23 point was brought up.

24 **MR. NILES:** There was a proposal by the  
25 U.S. Department of Energy to look at Hanford as one

1 of several different sites for disposal of what is  
2 called class C waste, which generally highly  
3 radioactive waste. There was a public hearing in  
4 Portland two months or so ago about that. It drew a  
5 great crowd. There was about 190 people that came  
6 and spoke out against that.

7 That is not a decision that is going to be  
8 made by the folks in this room at the Hanford level.

9 **MALE SPEAKER:** But I was asking what you  
10 are proposing. What is the appropriate disposal  
11 method?

12 **MR. NILES:** They are not proposing to  
13 dispose any of that at the local level. That is a  
14 national decision to be made.

15 **MALE SPEAKER:** But there is a proposal to  
16 bring all this high-level nuclear waste to Hanford  
17 for appropriate disposal but there is not  
18 appropriate disposal method yet. The only  
19 appropriate disposal method is to send it to New  
20 Mexico, correct?

21 **MR. NILES:** There is a possibility that  
22 Hanford could be selected. There is not a proposal

23 --

24 **MALE SPEAKER:** For appropriate disposal.  
25 I was asking: What is the appropriate disposal

1 method? Can we address that?

2 **MR. NILES:** I will tell you the disposal  
3 method they are proposing at Hanford is not the  
4 proper disposal. We don't support that. We oppose  
5 that.

6 **MALE SPEAKER:** What is appropriate for  
7 landfill?

8 **MR. FALK:** I am Dennis Falk from EPA.

9 The appropriate disposal for this waste  
10 stream, the majority of this waste stream, is to  
11 send it to the waste isolation pilot plant in New  
12 Mexico. There will be hundreds of shipments if we  
13 retrieve this material. So it will be traveling.  
14 That is the preferred place for this waste stream.

15 **MALE SPEAKER:** So send it to New Mexico?

16 **MR. NILES:** For geologic disposal.

17 **MALE SPEAKER:** Okay. I was just trying to  
18 clarify that, that there is no on-site Hanford  
19 appropriate waste disposal method. So DOE, who is  
20 represented here, is proposing bringing high-level  
21 nuclear waste to Hanford, and they have no  
22 appropriate disposal method.

23 Thank you for answering my question. Next  
24 question, please.

25 **MR. NILES:** Do we have more questions? I

1 know we had some hands.

2 **FEMALE SPEAKER:** Hi. I am Melissa Still.  
3 I live in Washington. My question is: There is a  
4 barrier layer beneath these tanks that was discussed  
5 earlier with DOE, and it was very educational. I  
6 appreciate your time.

7 My question is: Have there been core samples  
8 taken of that barrier and how it reacts to the waste  
9 itself and if it is a stable environment as far as  
10 that is concerned, and if there is ever an  
11 earthquake -- I mean we do live right next to Mt.  
12 Hood, and it is a very dynamic situation here -- and  
13 how that would affect the tanks at large?

14 **MR. DOWELL:** Okay. Let me peel back those  
15 questions one at a time.

16 The first one, and we are talking about, I  
17 think, something that was brought as common theme on  
18 the high-salt material and the extent and condition  
19 of that salt material. This is the area where we  
20 are taking two feet, and that was based on  
21 recommendations made earlier when we went public two  
22 years ago.

23 And when we talk about that material, if  
24 you look at the graph back there of the Z-9 area,  
25 the Z being the Z plant. It is the one far right

1 next to the trench area.

2 **(Brief interruption)**

3 **MR. DOWELL:** The plutonium has -- when  
4 that plutonium was processed, it was processed with  
5 carbon tetrachloride. It was in a form of aqueous  
6 and nonaqueous, very low PH, very acidic, and we  
7 know that when plutonium is in that form it is  
8 mobile, no argument, no argument when plutonium is  
9 in an acid base of about 2.4 to 2.6. The basic  
10 geology of ground PH in that area is about 8.

11 So we found that when that material was  
12 released and processed for decades, okay, it was in  
13 a perfect form for mobility at that time. And when  
14 I say that that material is stable, I am not saying  
15 it doesn't move. I am saying it is stable. The  
16 definition of stable is that by what we know today  
17 by the process of how we will model and what we  
18 sampled.

19 And what we continued to sample, that  
20 material is not moving and our assessment by  
21 modeling, and it goes to this extent and it doesn't  
22 go past it, is that for the central plateau the  
23 plutonium will not move from its current condition  
24 for 10,000 years, for at least 10,000 years.

25 That is what I mean by stable. That is

1 the state of the art modeling that we use. If you  
2 guys know something more, something better -- it is  
3 not our model. It P and L that is assisting us with  
4 this. It is an independent research group. I know  
5 t three studies right now that are looking at  
6 plutonium mobility. If we get new information on  
7 plutonium mobility that says we are wrong, guess  
8 what. We are going to revisit that decision, and we  
9 are going to have to go back to it say that the  
10 effectiveness of the decision we made is not as  
11 effective as it should be. If we have signs that  
12 plutonium is moving and getting into the water, we  
13 will go back and remediate that. That is the  
14 commitment we have by law. So that is all I can say  
15 about it. I mean it might not be the answer, and I  
16 don't know how far you want me to go on this because  
17 I can show the graph of where we think the plutonium  
18 is. We have some great slides, but we got a lot of  
19 questions.

20 **MR. NILES:** We are way, way behind.

21 **MR. DOWELL:** All right. So the second  
22 part of your question.

23 **FEMALE SPEAKER:** Earthquake. Did your  
24 model include seismic activity?

25 **MR. DOWELL:** Good question.

1           **MR. FALK:** No.

2           **MR. DOWELL:** It does not include -- yes,  
3 it does not. It does not include seismic activity  
4 and flood.

5           **FEMALE SPEAKER:** So then that is not a  
6 realistic model, in other words. It can't be  
7 because it doesn't include potential seismic  
8 activity.

9           **MR. DOWELL:** Well, the model that is based  
10 on the mobility of the plutonium, so --

11           **FEMALE SPEAKER:** But it is buried in a  
12 seismically active area.

13           **MR. DOWELL:** Okay. Well, this gets very  
14 complicated because I am very familiar with seismic  
15 activity in the Hanford site, and it gets very  
16 complicated very quickly because, you know, seismic  
17 activity in the Hanford site is not the seismic  
18 activity of the western side of the cascade  
19 corridor.

20           The seismic activity here in Hood River  
21 and across the plate leafing out through Seattle,  
22 that tectonic plate is much more active than ours  
23 is. We have a lot of micro earthquakes, a lot of  
24 activity there, but it is not the same kind of  
25 activity, much smaller. We are on a plate out

1 there.

2 So when we are talking about seismic  
3 stability, the bottom line is that model does not  
4 look at seismic stability. It looks like mobility  
5 of plutonium.

6 **FEMALE SPEAKER:** So what about the Rowena  
7 instability on the Rowena plateau?

8 **MR. DOWELL:** You are getting past the  
9 extent of my knowledge.

10 **FEMALE SPEAKER:** This is the crux of the  
11 matter that we have to get realistic about what you  
12 are modeling because if you are modeling something  
13 that is not based on the realities of our  
14 geographical area -- and I am not talking about Mt.  
15 Hood here -- then the models cannot model  
16 accurately.

17 **MR. DOWELL:** I will just say that please  
18 make the comment. We will look at it closely and  
19 see if we need to improve that model and assess the  
20 seismic risk or how we will remediate the site.

21 **MR. NILES:** A lot of questions here.

22 **MR. POLLET:** When I look at what you are  
23 talking about, like the inadvertent sort of ditch  
24 that occurred and the four sites clearly  
25 characterized by what waste was dumped in there

1 based on solely historic data, I am not seeing any  
2 presentation regarding sampling in the sites  
3 themselves for potential cross contaminates, yet I  
4 am seeing this great assumption about PH 8 and 9  
5 soils being lopped on to historic data for what went  
6 into those sites.

7           Why am I not seeing sampling data,  
8 scientific chemical sampling data from those sites  
9 telling me what is in them by depth? Does that data  
10 not exist at all?

11           **MR. DOWELL:** Okay. Let me talk about --  
12 again, we are going back to the high-salt waste  
13 group. I assume that is the focal point of the  
14 sampling discussion.

15           When we look at the Z-9 trench, which  
16 arguably is one of the worst areas, Z-9 is a Z-1A  
17 tile trench. Z-9 is the picture that Gerry showed  
18 you, that encapsulated area underneath, 100 feet  
19 long and nasty looking area.

20           We actually extracted 30 centimeters of  
21 that material in the '70s. That was based on  
22 extracting some of the material because of a  
23 perceived criticality risk. We realized that there  
24 is no criticality risk, but there is data that we  
25 have been using, and it is more resent than that. I

1 have got a quick summary, but it will give you an  
2 idea of what we have got.

3           The bore holes, and bore holes are  
4 basically wells that stop in the ground at a certain  
5 depth to basically determine what the soil column is  
6 contaminated with. Between 1992 and 2001 we had  
7 nine deep, deep bore holes with samples. We had two  
8 deep bore holes in 2005 to 2006 with samples. In  
9 down hole logs we had 44 simulation logs and 13  
10 wells between 1959 and 1998 and 13 spectral GaMo  
11 logs from 10 wells in 1992 and 2006.

12           When I say logs, it just means we took the  
13 material out and we used a simulation detector to  
14 determine the condition of the radionuclides that  
15 existed in those samples.

16           So these sites -- I mean the only reason I  
17 can bring to you a preferred alternative is because  
18 we feel and are confident that we have enough  
19 information on these sites to make decisions. So we  
20 wouldn't be here unless we felt we could  
21 characterize them well enough.

22           **MR. POLLET:** Where is that data that you  
23 were just citing? We have been looking for it.

24           **MALE SPEAKER:** Why isn't that data here?

25           **MR. DOWELL:** It is public.

1           **MALE SPEAKER:** You are asking us to go  
2 along with your decision-making process, yet we  
3 don't see the basic chemical information with that  
4 data being posted here, but we see a bunch of  
5 diagrams.

6           I think for scientific decision we need  
7 that data. We need to come back and have another  
8 meeting with that data is what I am thinking.

9           **MR. DOWELL:** I appreciate the comment. We  
10 have got the data. It is publicly available.

11          **FEMALE SPEAKER:** Where can we find it?

12          **MR. DOWELL:** Well, I will tell you what --

13          **MR. FALK:** It is referenced in the RIFS.

14          **MR. POLLET:** Well, the RIFS, I want to  
15 point out, was not linked to your document that you  
16 sent to the public. And searching for it, as we  
17 have mentioned, took people who know the site's  
18 administrative record over a week to try to find it.  
19 So it is not -- publicly available is not the same  
20 as being available to the public.

21          **MR. DOWELL:** But, no, Gerry, both of you  
22 bring up a good point, and that point is that the  
23 data has to be accessible to the public. And when I  
24 say accessible it has to be logical and easy to  
25 find.

1 The link has been repaired. Paula is  
2 nodding her head saying the link is there.

3 I have got a summary table made for me  
4 between the last time we did this and this time, and  
5 I want to share information with you. I am not  
6 trying to hide anything. So I don't know if we can  
7 -- I only want to give you stuff that is valid. I am  
8 not sure I want to release this tonight.

9 But your point is well taken. The data  
10 should be available, and it should be clear. It  
11 should be transparent how we are making decisions.  
12 So I am with you on that. I will work on it. So  
13 please make the comment, and we will try and get  
14 that information out.

15 **MR. POLLET:** Well, let me just say, JD,  
16 and I appreciate that commitment, but it is really  
17 late in the comment period already. We have two law  
18 student interns and two expert volunteers who are  
19 hydrogeologists trying to look through this data and  
20 been unable to find it, and then if we get it this  
21 week we have got a week to the comment period.

22 It seems to me the obligation should be  
23 that you should have had it available, should have  
24 been clearly presented first off in the proposed  
25 plan, not in some other document.

1 And, secondly, you need to extend the  
2 comment period for people to actually access stuff  
3 for as long as it has been that we have not been  
4 able to access it.

5 **MR. DOWELL:** We will evaluate the comment.

6 The material and information was available  
7 in the remedial investigation feasibility study, and  
8 the link -- you know, we need to determine whether  
9 the link was broken and make an assessment of that.

10 But I hear what you are saying, Gerry. So  
11 we will look at it, and if it is fair we will make  
12 the right decision on that. The information is  
13 there.

14 But, again, when I think of accessibility,  
15 you know, I have been working on this for four  
16 months now, and I am getting it now. Okay. So I  
17 think we can make that easier. So, again, we will  
18 see what we can do.

19 Thank you.

20 **MR. FALK:** Gerry, one other thing, if you  
21 would make that a formal public comment about  
22 extending the formal comment period, I think we will  
23 be amenable to that.

24 **MR. POLLET:** Thank you very much.

25 **MR. NILES:** All right. So how many more

1 folks still have questions before we have comments?

2 We have got at least three.

3 **MALE SPEAKER:** I appreciate your talking  
4 about four months. I have been working on this for  
5 over 25 years. I have been trying to get a site  
6 visit. I think it is essential that members of the  
7 public who own this property, this mess, be there.

8 We can't get there because every time we  
9 get on the site visit the tours are filled up, and  
10 you have to put your name on a tour three, four  
11 months ahead of time. I don't know what I am doing  
12 that time.

13 And so I think all the agencies really  
14 have to work a lot better to allow citizens to get  
15 out there, first question or point.

16 Second one is: I would like to know what  
17 percentage this proposal is of all the underground  
18 stuff that's there like the solid waste in trenches.  
19 Is this the precursor of the next proposal about how  
20 contaminated solid waste would be handled? I would  
21 like to know what percentage is this of anything  
22 that is in trenches and buried out there.

23 **MR. DOWELL:** I can give you an example of  
24 the Z-1A trench, which is the high-salt area, to  
25 show you what we think is the footprint for that

1 material. It is a rough scale.

2 And let me just put that up. I think it  
3 will kind of give you an idea of what two feet is.

4 **MR. NILES:** I think what he is trying to  
5 say is: Of these 21 waste sites, what percentage of  
6 the whole Hanford mass. Is that --

7 **MALE SPEAKER:** Not the liquid stuff  
8 because we have been going on for that for a number  
9 of years.

10 **MR. NILES:** But the burial.

11 **MALE SPEAKER:** But the buried stuff, the  
12 other contaminated buried stuff, what percentage --

13 **MR. DOWELL:** The other sites.

14 **MALE REPRESENTATIVE:** These sites were  
15 selected as a priority because they contain the far  
16 majority of the plutonium that is not in the burial  
17 ground, and so you only have two very large  
18 plutonium sources at the Hanford site that have been  
19 released into the environment. That is solid waste,  
20 and that was disposed of as liquid waste, and these,  
21 because of public concern, have been elevated, and  
22 those are being done first.

23 When those two sets of decisions are made,  
24 that will disposition the far majority of the  
25 plutonium that has been released in the environment

1 at the Hanford site.

2 Do you agree with that, Dennis?

3 **MR. FALK:** Maybe I will just follow on  
4 this a little. Dennis Falk from the Environmental  
5 Protection Agency.

6 So, in general we think of these liquid  
7 waste disposal sites for plutonium, they contain  
8 about half of the plutonium that is disposed of in,  
9 I will call it, historic times. The other half of  
10 that is in the solid waste burial grounds which will  
11 be a decision we make in a few years.

12 The other major contaminate in the solid  
13 waste burial grounds that we are very concerned  
14 about is uranium. We have hundreds and hundreds  
15 kilograms of uranium out there.

16 So, again, in the scheme of things, it is  
17 about 50 percent of the historic plutonium we are  
18 talking about tonight. We will be talking a lot  
19 about the rest of the plutonium and, again, uranium  
20 in a future discussion.

21 **MALE SPEAKER:** Thank you. Can you get  
22 back to us on when we can visit the site? Can  
23 somebody from EPA or DOE? Not tonight.

24 **FEMALE REPRESENTATIVE:** I can talk to you  
25 after the meeting.

1           **MALE SPEAKER:** Well, but I think everybody  
2 should hear that.

3           **FEMALE REPRESENTATIVE:** There is a public  
4 tours program. It opens up every year on a  
5 reservation level.

6           **MALE SPEAKER:** But it is not working. My  
7 wife and I have been trying to do that for two  
8 years. We can't get there. It is not working.

9           **FEMALE REPRESENTATIVE:** I understand there  
10 is a huge demand. We are trying to increase the  
11 capacity. It is a balance between, you know,  
12 spending money on cleanup and spending money on  
13 public tours.

14           We have increased the capacity to provide  
15 6,000 visits a year. So it has gone up from a few  
16 hundred to 6,000. It is going up slowly.

17           If I can get your name after the meeting,  
18 maybe I can give you tips on how to get on that.

19           **MR. DOWELL:** Paula, can you explain what  
20 they tour when they go out.

21           **FEMALE REPRESENTATIVE:** Well, the tour  
22 takes you around the entire site. So you see the  
23 old reactors. You see the cleanup as it is  
24 happening, and then you see the cleanup that has  
25 been completed. There is tour guides at each stop.

1 They talk about groundwater. They talk about  
2 building this demolition. They talk about long-term  
3 stewardship.

4 So it is a good look at what is going on,  
5 what has happened in the past and happening now. It  
6 also talks about the challenges because there is a  
7 lot of challenges we have out there.

8 **MR. NILES:** Okay. I think we have two  
9 remaining questions.

10 **MALE REPRESENTATIVE:** I was just going to  
11 address one of those questions.

12 So there is the Hanford advisory board  
13 which includes representatives from Oregon, activist  
14 organizations, local and federal officials and  
15 public interest groups. And they are seeded by  
16 different organizations so that those  
17 representatives go back and they tell their  
18 constituents about this information.

19 We have been involved in this feasibility  
20 study, and what we are really talking about are:

21 These are the two summary reports for the  
22 feasibility studies which says: Okay. We know  
23 there is a problem. What are the alternatives, and  
24 what are the best choices of those alternatives.

25 We had public workshops over the last two

1 years, and we have significantly revised the  
2 proposed plan. And, as Ken said, several of the  
3 proposals now the State of Oregon says "we fully  
4 endorse" or something similar to that.

5 But the remedial investigation information  
6 that came out, it came out five years ago. This  
7 information has been available, and they are very  
8 similar reports to this, and this is the text. The  
9 data is actually on a DVD in the back of the report.  
10 There is thousands and thousands of data points to  
11 discuss these different sites.

12 People ask: Why do wells cost so much or  
13 bore holes cost so much? I can go out to the  
14 private sector, and I can drill a well for \$10,000.  
15 We drill a well, we have to make sure we don't  
16 introduce any mud, any liquids to this, and we  
17 basically take a cylinder that is sealed on one end,  
18 and most of the high-tech soil representative  
19 samples, you take this four-foot cylinder and you  
20 pound it into the ground, and you pull it back out  
21 and you collect a soil sample, and then you put that  
22 cylinder back into the ground.

23 And you can imagine that if you are trying  
24 to collect a sample from 250 feet down, you have to  
25 disassemble your drill stem every single four feet,

1 and you are collecting the soil sample. In these  
2 areas we had 65 contaminates of concern that we  
3 targeted specifically. So the analysis on each soil  
4 sample literally costs tens of thousands of dollars.  
5 And the Z-9 site in particular, we spent almost \$2  
6 particular sampling underneath that for one sick  
7 string of samples that went all the way down to  
8 groundwater.

9           These areas have been extensively sampled.  
10 The information has been out there. We started  
11 public workshops more than two years ago on this.  
12 We are bringing it back up because we have  
13 reevaluated our proposals, and we will continue  
14 until we get consensus with the tri-public -- or the  
15 tri-party agreement.

16           So don't take the misrepresentation or the  
17 misunderstanding that there is just a limited number  
18 of samples. There is literally thousands of samples  
19 related to these sites, and the process has been  
20 years in the making.

21           **MR. NILES:** Let's get these last couple  
22 questions if we can, and then we will go to public  
23 comment.

24           **MALE SPEAKER:** I was curious how far the  
25 groundwater is below some of those high-salt areas.

1 And also, secondly -- can I ask a follow-  
2 up on that?

3 **MR. NILES:** That sounds like about a  
4 three-word answer to that question.

5 **MR. DOWELL:** Well, the answer best is  
6 right behind you. You will see those graphs that  
7 have the actual scales on site.

8 But, first, the Z-1 area goes down 110  
9 feet. It hits a thing called KA Leach layer, which  
10 is a compact, dense kind of clay layer, and then it  
11 is about another, I think, 225 feet.

12 **MALE REPRESENTATIVE:** Total of 250.

13 **MR. DOWELL:** 250. So it is another 150  
14 feet.

15 That is representative of the central  
16 plateau. It is in the 250 to 300 foot range. When  
17 you get closer to the river, it slopes up when you  
18 get closer to the river. So you think of the water  
19 column constantly changing.

20 **MALE SPEAKER:** As a follow-up, I am kind  
21 of curious. There is some 1979 and 1959 samples  
22 referenced. It seems like over the span of like 10  
23 or 15 years the plutonium that was immobile and will  
24 be there forever, it went down 120 feet in 10 or 15  
25 years, and it has been 40 to 45 years since then.

1 So logically it seems if it kept going on at that  
2 rate even with that barrier or whatever, maybe that  
3 slowed it down a little bit, but it seems like it  
4 would have hit the water by now.

5 I am curious like why -- I mean that seems  
6 like a really big problem, and it seems like it  
7 should be alarming and that essentially if there is  
8 that stuff in the groundwater then it should not get  
9 in the river. And a lot of us here use the river,  
10 kite runners and windsurfers. We love this area,  
11 and I am curious, yeah, why you are not digging  
12 further down, I guess.

13 **MR. DOWELL:** Got it. I am a river user,  
14 too. So I am with you on that.

15 I talked about the samples that I just  
16 characterized, the ones for 2002 and 2006. That is  
17 the Z-9 area. That is an example where that area is  
18 very similar to other high-salt areas. We really  
19 characterized that very well, and we got the  
20 necessary information to indicate that that plume  
21 that is graphically represented on that chart back  
22 there characterizes where that plume is today. The  
23 motive force that drove it down to that level back  
24 in '50s and through processing time that it took no  
25 longer exist. That is why our modeling assesses

1 10,000 years and doesn't show that it is moving.

2 Now, that doesn't mean that plutonium is  
3 immobile. That is not what I am saying. I am  
4 saying that in the central plateau for the plutonium  
5 in these sites -- and that is the way we look at it  
6 because we look at these sites with each decision --  
7 is stable.

8 And, you know, now you get into the thing  
9 are you going to be here in 10,000 years and a half  
10 life of 240,000 years. Those are all relevant  
11 points. It is just that is what we know, and we  
12 have to be here as long as that is a risk, and we  
13 have to protect human health and the environment.

14 **MR. NILES:** Thank you.

15 There was one or two last questions. Who  
16 hasn't had an opportunity? There you go.

17 **MALE SPEAKER:** Just a quick question. I  
18 am curious if there is any sampling that has been  
19 down lower in the Columbia, say, our area for some  
20 of these chemicals. I mean here we are down in this  
21 are, and we all use this area we are talking about  
22 way up there.

23 **MR. NILES:** Actually, I can answer part of  
24 that. Maybe I can answer part of that.

25 The Oregon State Health Department had a

1 monitoring program of the Columbia River in the  
2 early 1960s to the early 1990s. When the last  
3 single pass reactor in Hanford shut down in 1972 and  
4 Hanford was no longer dumping huge amounts of  
5 radioactivity into the river, the levels dropped  
6 dramatically, and from about 1972 on Oregon Health  
7 measured basically zeros in this part of the river.  
8 It took a little while to go down.

9           The sensitivity of the equipment is such  
10 that it has grown so sensitive, the equipment, that  
11 they can really detect to a great level, and you can  
12 never find nothing. You can always find a little  
13 something.

14           But Oregon Health stopped their  
15 environmental monitoring program for radioactive  
16 materials in the Columbia River in the 1990s just  
17 because they kept getting, in effect, zeros down  
18 here from Hanford.

19           There was a confirmatory sampling done  
20 about six years ago that was a joint effort between  
21 the states of Oregon and Washington and Department  
22 of Energy in which Oregon State University analyzed  
23 the samples that we took and confirmed again that  
24 there really isn't anything down here in terms of  
25 radioactive materials from Hanford in this part of

1 the river. It is not to say there is not still  
2 small amounts of stuff getting into the river today  
3 because there are.

4 **MR. FALK:** Just to follow on, the EPA has  
5 a very large program that is looking in the Columbia  
6 River called the Columbia River Toxics Program.  
7 There are reports out. If you are interested, let  
8 Emmy or myself know and we can get you that  
9 information. So it is an ongoing program. It shows  
10 you all the data that has been collected. Hanford  
11 data is included in that report.

12 **MR. DOWELL:** I would add that DOE also  
13 does an annual assessment of samples taken in and  
14 around the Richland area and Columbia River off-  
15 site. So that annually we are determining whether  
16 there is a source that gets down river.

17 **MR. NILES:** Does that take care of the Q  
18 and A?

19 We have this gentleman here.

20 **MALE SPEAKER:** We heard testimony tonight  
21 about how your plan isn't reliable because  
22 excavation would stop at two feet or 15 feet.

23 And why not dig as deep as necessary, 100  
24 feet or whatever?

25 **MR. DOWELL:** Good question.

1           **MR. NILES:** JD has a little visual help  
2 here.

3           **MR. DOWELL:** I want to show you that graph  
4 that I was talking about earlier so you have a feel  
5 for what we are talking about.

6           Okay. To explain this graph, this is an  
7 example of what we think the displacement of  
8 plutonium is at various levels in the Z-1A tile  
9 field, which is comparable to Z-9. This is a high-  
10 salt field, and when you look at this field the  
11 bottom of the structure, which is the structure that  
12 was used to actually dump the waste, if you will.  
13 It is about 18 feet. Two feet takes us to 20 feet  
14 of extraction. At 20 feet extraction, we are at 51  
15 percent right there (indicating. So 84 percent  
16 would be two more feet.

17           If we took 64 feet, it would be about 99  
18 percent, and it goes down to about 110 feet before  
19 it hits the KA Leach layer and where we don't see  
20 any more plutonium and we don't model it and we are  
21 continuing to sample it in our groundwater.

22           So your comments, if you have a comment  
23 about this, this is what it is based on. You say:  
24 Well, why are you stopping at two feet? And the  
25 answer -- this gets into a complex concept because I

1 had to change the paradigm I thought about because  
2 we are not -- our original remedy, which was  
3 completely legal and protected human health and the  
4 environment, was to cap this area, put a cap -- take  
5 out the structure, put a cap over the remaining  
6 area. Call it good.

7           When we went out for public comment, very,  
8 very, vocal reply, and to get more material out. It  
9 doesn't specifically protect the public. Gerry  
10 showed you a slide about the concentration levels  
11 taken from Lawrence Livermore, I think it was, or  
12 some of the other sites, those are specifically to  
13 protect the public.

14           You have to believe that this is an  
15 industrial area. The public will not have free  
16 access to it because when you looked at his slide  
17 and you looked at the right-hand corner, we looked  
18 at those levels to protect the worker. We are  
19 protecting the worker from this area. I have to  
20 protect this area from someone going in with a  
21 backhoe and digging it out.

22           It doesn't change the solution or protect  
23 you anymore by me taking more material out of here,  
24 and I could have capped it. So if you think we  
25 should take more material out of it, make the

1 comment, but from the standpoint of specifically  
2 protecting human health and the environment, it  
3 doesn't protect the human health and the environment  
4 any more than a cap would.

5 I had to change my paradigm because it is  
6 always good to get the material out of the ground,  
7 right? Not if you understand the assumptions we  
8 have made, which is that the material is stable in  
9 the form it is in, and it is not moving, and by our  
10 modeling for the central plateau, 10,000 years right  
11 now, and that is the extent of our model.

12 So that is how we came to that decision.  
13 Good decision? That is why we are here to take your  
14 comments.

15 **MR. NILES:** Which we would like to get to  
16 shortly, but we keep getting more questions. So I  
17 guess we will keep going with the questions here.

18 **MR. DOWELL:** Tell you what, before I go  
19 into another question, can I show you one thing.  
20 This kind of gives you a perspective also.

21 Even though in this case when you look at  
22 the balance approach of how we made decisions and,  
23 you know, long-term and short-term effectiveness  
24 really don't factor into this. The reduction of  
25 toxicity does factor into it because you reduce the

1 amount of material in the ground. The implement  
2 ability factors into it because we are already there  
3 taking material out, so somewhat cost effective if  
4 you are already there, but then you look at the  
5 cost.

6 So really these three elements drive the  
7 balance of that decision in this case, and this kind  
8 of shows you a scale of what we are talking about,  
9 and it gets a little complicated, but if we went  
10 down and removed the structure the relative cost is  
11 about that. You take two more feet, which is option  
12 A -- make sure I get this right. So I don't cross  
13 these up. They are easy to cross up. It costs  
14 about 110 million dollars. When I go down about, I  
15 think it is 18 feet, it jumps to 600 million  
16 dollars.

17 So going back to the point I made at the  
18 start, if it is not adding value to protect human  
19 health and the environment by taking more of that  
20 material out because it is stable in the form that  
21 it is in, and you have to make that assumption, and  
22 we are the long-term custodians of that area, then  
23 it doesn't make sense to invest this money here when  
24 I can use it to mitigate more active sites in other  
25 areas and to use it to prioritize other work that I

1 think is just as important. I think we are talking  
2 about 22 sites tonight? How many sites?

3 **MALE REPRESENTATIVE:** 800.

4 **MR. DOWELL:** 800 sites.

5 Now, this is one of the worst sites.

6 Let's go after the bad stuff first. If you think we  
7 should take more, make the comment.

8 **MR. NILES:** Other questions?

9 **FEMALE SPEAKER:** Yes. I have a question.

10 It is my understanding that what is called  
11 the Atomic Energy Commission had made a decision  
12 that it was unsafe to dispose of any high-level  
13 radioactive waste on the surface since the mid-70s.  
14 They were supposed to be putting in a deep geologic  
15 repository, and then I thought that I saw that they  
16 were putting in the trenches as late as 1994; is  
17 that correct? That is what I thought I just saw on  
18 something tonight.

19 **MR. DOWELL:** Yes. That was Gerry.

20 **FEMALE SPEAKER:** So I am just curious why  
21 would we not be putting it in the deep repository  
22 trenches from then onto the mid-70s if that is what  
23 they determined because it is a huge presumption to  
24 me. I can't imagine how any human being had the  
25 arrogance to assume they know what is safe for the

1 next 24,000 years for any of this material that is  
2 even being made anymore to have put it anywhere  
3 since the mid-70s because those were the standards  
4 that it was being set for, human and environmental  
5 safety by law.

6 So why would this ever be changed, and why  
7 would they ever care about how much it costs when  
8 the cost of cancer and all of this can't even be  
9 calculated.

10 **MR. NILES:** Somebody want to take a shot  
11 at answering that?

12 **MALE REPRESENTATIVE:** Well, the far  
13 majority of this waste was disposed of prior to  
14 1970, and the most pertinent law that comes to my  
15 mind was the transferential (phonetic) haystack,  
16 which is a future-looking regulation or law, and it  
17 talks about future disposals.

18 We have a lot of environmental laws, and  
19 generally the environmental laws are: What DOE does  
20 in the future and how to deal with the past  
21 practices. So in the future, after that law in 1970  
22 transferential waste was no longer disposed of in  
23 shallow burial unless it could be shown that it was  
24 the equivalent level of protection of a geological  
25 repository, and they have done that in some

1 locations.

2           Unfortunately, that law doesn't directly  
3 apply to this unless you exhume the waste or remove  
4 the waste from its place. The law doesn't apply to  
5 waste that was previously disposed, much like solid  
6 waste landfills. The landfill regulations for today  
7 and virtually every aspect of environmental law  
8 doesn't apply to retroactive except those laws such  
9 as CERCLA which says go back and evaluate what we  
10 have done in the past. Determine if it is a risk.  
11 Determine what corrective action needs to be taken.

12           And that is why there isn't a prescriptive  
13 thou shall dig this up and remove it to a geological  
14 repository because that just is not what the law  
15 says. If you are going to dispose today, you are  
16 absolutely correct. A lot of it has to go that way.  
17 So it couldn't be disposed as a liquid. So it would  
18 have to be put into a solid form before it go into a  
19 geologic depository.

20           So the laws say: Evaluate all your mistakes of  
21 the past or your past practices and determine the  
22 risk and take appropriate action.

23           **MR. DOWELL:** Yeah. We have a group,  
24 actually, not underneath Briant, that is actually  
25 recovering the true waste that was put in

1 temporarily storage in the ground, and that material  
2 is brought out and to say, to determine, whether it  
3 is true waste and it is shipped appropriately to  
4 WIPP.

5           So we have material today that we are  
6 recovering out of trenches that we will continue to  
7 recover at least through the end of this year that  
8 is going to WIPP on a realtime basis we made that  
9 commitment under that law to make sure the material  
10 went to the right repository long-term. It is the  
11 pre '77 I think this went through. MALE

12 REPRESENTATIVE: '70.

13           **MR. DOWELL:** '70. 1970 waste where it  
14 doesn't come underneath that law. So we disposition  
15 it on a case-by-case basis on these types of  
16 decisions.

17           Now, the material that comes out of the  
18 two feet I think Dennis alluded to, that material  
19 will be assessed and will go to the appropriate  
20 burial, repository or ERDITH as it gets screened.

21           **MR. NILES:** In the back, you had a  
22 question as well?

23           **FEMALE SPEAKER:** Thank you. So based on,  
24 I think it is JD or --

25           **MR. DOWELL:** That's me.

1           **FEMALE SPEAKER:** Based on your  
2 acknowledgment that seismic activity was not  
3 included in the modeling, you are asking us to make  
4 comments and make decisions and make recommendations  
5 based on the inaccurate data that you presented  
6 because the data came from the modeling, I presume.

7           So my question is: Will new modeling be  
8 performed that does appropriately include accurate  
9 seismic activity that could impact the Hanford  
10 region?

11           And then we should be allowed to rehear  
12 the information based on the new and more accurate  
13 data because without the seismic activity being  
14 modeled, this is all bogus.

15           **MR. DOWELL:** The Department of Energy when  
16 it builds a facility has a robust process to ensure  
17 safety that looks at seismic and looks at national  
18 hazard phenomenon like you are talking about.

19           The remediation, we don't have that  
20 mechanism. So we have taken the comments, and we  
21 are committed to making sure we thoroughly invest  
22 and evaluate whether this decision has an impact  
23 based on seismic. And that means -- I can't commit  
24 to a model because I don't think -- the model that  
25 we used that monitors or models the movement of

1 these materials in the ground doesn't have the right  
2 components or configuration --

3 **FEMALE SPEAKER:** -- geological data that  
4 is available for us.

5 **MR. DOWELL:** Right. And that is what we  
6 are committed to doing with that comment, is looking  
7 at it. I just can't tell you the extent of what it  
8 is going to be. I think it is a great comment. We  
9 do it for buildings, and it is something we need to  
10 look at for this site. We are committed to doing  
11 that.

12 **MR. NILES:** All right. Folks, let me just  
13 -- you know, if you guys are all willing to stay  
14 here until 11:00 or midnight to give your formal  
15 comment, which we haven't even begun to do yet, that  
16 is fine. We will do that. I just don't want people  
17 to start leaving if they haven't had an opportunity  
18 to give a formal comment, and this question-and-  
19 answer period seems to keep going on and on and on  
20 with no end in sight.

21 So I really want to ask you guys because,  
22 you know, it is your comments that the tri-parties  
23 want to receive.

24 **MALE REPRESENTATIVE:** Ken, I am a little  
25 concerned if we don't get the comments soon, people

1 are going to start leaving.

2 **MR. NILES:** That is what I am concerned  
3 about as well.

4 So are there any compelling questions that  
5 can't be framed as part of your comment that anyone  
6 feels the need to ask?

7 Go ahead, and we will get the microphone  
8 to you.

9 **FEMALE SPEAKER:** JD, you were talking  
10 about true thresholds.

11 Can you tell us what true threshold is,  
12 please.

13 **MR. DOWELL:** My point is that when we  
14 bring material out of the ground, we have a  
15 threshold by which we monitor it. So if it goes  
16 across that threshold, we determine that it is  
17 classified as true waste, and it gets remediated in  
18 the repository long-term storage. You know, I don't  
19 have the --

20 **MALE REPRESENTATIVE:** 100 nanocuries per  
21 gram.

22 **MR. DOWELL:** 100 nanocuries per gram is  
23 the threshold. So it is a concentration as it comes  
24 out.

25 **MR. NILES:** Okay. Any other questions?

1           **MS. LAIJA:** I want to clarify, for people  
2 who provide comments tonight, just know that in the  
3 decision we make we will respond to your comments.  
4 So you will get an answer to the comments you make,  
5 and we will let you know how that impacts the  
6 decision we are going to make.

7           So keep that in mind when you are giving  
8 your comments that those will be responded to as  
9 well.

10           **MR. FALK:** In the form of the comment  
11 period.

12           **MS. LAIJA:** Yes. After he start the  
13 formal comment period at the misc in a just second  
14 here.

15           But don't think that you are going to miss  
16 out on hearing a response. We will provide you with  
17 the response in the actual decision document.

18           **MR. NILES:** So how about a show of hands  
19 of people who are expecting that they would like to  
20 make a comment? You know, if you change your mind  
21 and decide to add one later, that is fine.

22           So if folks want to start coming up to the  
23 mic, maybe a couple at a time.

24           **MR. POLLET:** Can I ask a question? Is  
25 there some reason why people can't just make the

1 comments and use the mic from their seats which is a  
2 lot more comfortable than standing up there and  
3 talking at the screen.

4 **MR. NILES:** What would people prefer to  
5 do? At your seat?

6 **MR. POLLET:** Make it more comfortable.  
7 Sorry, Sonya. We are going to run you around a  
8 little more. That is what people would like to do.

9 **MR. NILES:** All right. So let's see some  
10 hands again of people who would like to make a  
11 formal comment.

12 **MALE SPEAKER:** Jurgen Hess, 412 24th  
13 Street, Hood River.

14 I want to thank the turnout tonight, thank  
15 everybody for coming. It is wonderful. It is  
16 really neat to see so many interested people. It is  
17 great.

18 Just a day ago there was a big gasoline  
19 tanker that overturned east of Multnomah Falls. The  
20 state was required 100 percent cleanup even if they  
21 have to remove all the soil.

22 And I think we should apply that same  
23 principle to the cleanup here. Two years ago when  
24 DOE and EPA came to Hood River, that was the  
25 overwhelming comment, 100 percent cleanup, don't

1 leave anything.

2 I think there are too many unknowns,  
3 particularly with transference of plutonium. We  
4 just don't know enough about it yet, and I don't  
5 know my spirit will still be here 24,000 years from  
6 now, but I hope -- you know, we don't know enough  
7 about this stuff. It is too new. So I think be  
8 cautious. Take the low risk, and the low-risk  
9 approach here is to do the complete removal. You  
10 have a Hanford advisory board that recommended that.  
11 That is a cross-balanced group from all different  
12 interests.

13 I think that's the best thing to do. I  
14 strongly recommend you do that. I defer a lot to  
15 Ken and the State of Oregon about the cesium. I  
16 don't know enough about that, but I think certainly  
17 for the plutonium take the cautious approach.  
18 Excavate it all, bring it to the salt caves in New  
19 Mexico.

20 Thank you.

21 **MR. NILES:** You are welcome to give your  
22 name and your comments. If you don't want to, you  
23 don't have to.

24 **MALE SPEAKER:** Thanks for the time to do  
25 this. First of all, I mean as there is many

1 comments I want to make, and I will make them as  
2 brief as I can.

3 But regarding the sampling data, even  
4 though you have thousands of pages of data, there is  
5 only less than 300 elements in the periodic table  
6 last I looked. It would be fairly easy to present  
7 the data for these four sites based on ranges of,  
8 you know, a range of plutonium based on depth and a  
9 range for cesium based on depth and a range for  
10 carbon tet based on depth, you know, with  
11 statistical stuff like highs and lows.

12 I don't think that would be very  
13 difficult. I don't think we need to go through  
14 thousands of pages of data to see that. And that  
15 would make our understanding of the process a lot  
16 better.

17 Secondly, regarding the curve that you  
18 presented when Darrell asked the question about how  
19 you decided to go to two feet down. When I saw on  
20 that curve, and I may have misinterpreted that, but  
21 there was a lot of data points way down low but one  
22 or two data points where you made the two-foot  
23 decision. That doesn't seem like a sound way to  
24 make a decision if that is correct. So I wonder  
25 about that, and I wonder if there is not a better

1 way to present that data, too.

2 Thirdly, as far as the cleanup is  
3 concerned, I think that we should go to the  
4 California standard, at least, for the plutonium  
5 cleanup, and perhaps, you know, as far as any  
6 cleanup we should be looking at something like a 99  
7 percent removal.

8 And I know that realistically and  
9 economically you are not going to probably end up  
10 going to some of these places, but if you don't go  
11 to those places, whatever is left in place should  
12 simply not just be kept. There should be monitoring  
13 wells surrounding the area. They should be  
14 guaranteed to monitor for an indefinite period of  
15 time because you don't know what is going to leach  
16 when.

17 And, thirdly, a cap isn't sufficient.  
18 With lateral movement of water, there should be  
19 trenched walls going down to stop the lateral  
20 movement of water in your engineering design.

21 Let's see. Oh, yes. My name. I forgot.  
22 Dave Berger, Washington. I apologize.

23 And, perhaps, you know, once you get to  
24 the point that it seems like you are going to have  
25 to pull a lot of that stuff out regardless of what

1 that decision is, you know, this is also a great  
2 jobs program. Finally we are at same page with the  
3 people in tri cities. We are want them all working.

4 But in the meantime, when you decide what  
5 you are pulling out, we should have a second meeting  
6 to determine where it is going and what we see  
7 regarding the acceptability of that decision.

8 And, lastly, I will end with a joke.  
9 Okay? When I was in Tibet, the old saying was that  
10 the Tibetan monks around the monastery feed the dogs  
11 because they are afraid that bad monks will come  
12 back as dogs. It is sort of an insurance policy.  
13 Well, I sure as hell don't want to come back as an  
14 ant at Hanford.

15 **MR. NILES:** Thank you.

16 **MALE SPEAKER:** Maybe above two feet.

17 **FEMALE SPEAKER:** My name it Kathy Carlson.  
18 I am a resident here in Hood River. I have been  
19 coming to these meetings for more than 20 years, and  
20 I remember some stuff that was said at previous  
21 meetings.

22 One of the things that I recall pretty  
23 strongly was that the site would be left in a state  
24 -- the goal was for the site to be left in a  
25 condition where the public could use it. And then

1 they are talking about here today about putting  
2 stuff over other stuff, and it is going to be an  
3 industrial site and it is going to be maintained for  
4 10,000 years. And then plutonium is like around for  
5 24,000 and half life can go to 40,000 years. I  
6 don't even think anything we engineer is going to  
7 last for 10,000 years. It will probably last for,  
8 you know, the life of a car, 20 years or whatever,  
9 you know.

10 I think that -- and I heard a lot today  
11 about -- oh, the other thing the lady brought up  
12 about the seismic. Nothing was done to put into the  
13 thing about seismic conditions. I don't see  
14 anything about floods. They are having a flood in  
15 the Midwest. You know, Fort Calhoun is in great  
16 jeopardy because they didn't look at floods.

17 And so Hanford is on the river. I don't  
18 see why they would not look at floods as part of  
19 their conditioning to make -- I heard a lot of  
20 things saying: Our assumptions. We are assuming.  
21 We are assuming. "We felt. We feel. We are  
22 confident." And none of this stuff is backed up by  
23 scientific data.

24 And then the other things were, comments  
25 that I heard here from you folks was, oh, "We are

1 transparent. We want to be clear." Not. There is  
2 nothing here that is clear, and it is not  
3 transparent.

4 And then another term I heard here tonight  
5 was long-term stewardship. Again, we are going back  
6 to 24,000 to 240,000 to 10,000, even to a hundred  
7 years. I mean we are always going to maintain that  
8 site. It seems like there is enough plutonium in  
9 these -- in the ground if you left what you want to  
10 leave in there that they could still be build 35  
11 nuclear bombs. Seems like a great terrorist site to  
12 me.

13 So, anyway, those are my comments. Thank  
14 you.

15 **MR. NILES:** Thank you.

16 Other public comments, folks?

17 A couple folks here in the middle.

18 **MALE SPEAKER:** My name is Hafiz Heartsun.  
19 I live here in Hood River.

20 I guess I will say in my own words  
21 something I have heard from other people, but I  
22 found your assumption that DOE will safeguard this  
23 area for some number of years, hundreds, thousands,  
24 tens of thousands of years, to be absurd. It breaks  
25 the strains of credulity. How many years ago was

1 the pyramids built? It was like 5,000 years ago, a  
2 mere half of that period. Where is the Pharaohs?  
3 Where are they guarding their pyramids? And where  
4 is any country that has been around for a thousand  
5 years? Is there a single country on the planet that  
6 has had a consistent government for 1,000 years?  
7 500 years? No. It is just not in the historical  
8 record to believe that America, and let alone the  
9 DOE, will be around this long, is just absurd. It  
10 is ludicrous. It is arrogant beyond belief. I mean  
11 right now we are looking at, you know, the  
12 government may default next week.

13           What is the DOE going to do when nobody in  
14 this department has any money? Are you going to  
15 stand out there and guard it for the rest of your  
16 lives and set up camps so all of your generations  
17 forever will guard, never leave, because my  
18 ancestors 10,000 years ago were employed by DOE. It  
19 is our sacred mission to stay here. It is like,  
20 come on, guys. You really got to clean it up so it  
21 becomes the no-action alternative that you are  
22 thinking, that it requires no action because that it  
23 is the only realistic thing that you can sustain  
24 over the period of time necessary.

25           I mean sure, yeah, we love science, but

1 this is like science fiction crap. You just got to  
2 give -- I mean you have got to give us a believable  
3 story. You are not going to be here for 10,000  
4 years. That is just absurd. It insults our  
5 intelligence, really. I am serious. This is not  
6 scientific. You have no scientific basis to say we  
7 will be here 10,000 years.

8 Thank you.

9 **MALE SPEAKER:** Joe Still, 404 Oak Street.

10 First I want to say thank you to the  
11 federal representatives, state representatives for  
12 coming. I appreciate it.

13 Of all the comments I have heard tonight,  
14 I would just like to focus on one, and it was a  
15 woman in the back -- I don't know who it was -- who  
16 mentioned about the seismic. And I know something  
17 about CERCLA SuperFund Model Toxics Control Act. I  
18 actually work in the tri cities. So I am somewhat  
19 familiar with that.

20 On May 18, 1980 I was hiking in a place  
21 called Randal, Washington and there was a little  
22 event that day if you remember. Mt. St. Helens lost  
23 half of itself, and I am standing here right now,  
24 and I remember watching rocks the size of cars fly  
25 horizontally through the air, and I hope that you go

1 through your decision-making processes, that you  
2 will reconsider and evaluate the seismic components  
3 of all these decisions.

4 We are in the ring of fire. All it takes  
5 is slight tectonic plate movement, and we could have  
6 a problem of gigantic proportions, and I hope that  
7 state and federal officials do not make a decision  
8 about considering seismic based on what judges,  
9 legislators and attorneys have decided is the right  
10 thing to do because there is no do-over. Thank you.

11 **MR. NILES:** Thank you.

12 Other people who would like to make a  
13 comment in the back there?

14 **FEMALE SPEAKER:** Hello. Corey Water,  
15 Moser, Oregon.

16 I understand everybody is working under a  
17 budget regime, but I consider it a waste -- okay.  
18 So more thorough options in cleaning up the  
19 plutonium specifically in these sites was rejected  
20 on the basis of being too expensive, but I consider  
21 it a waste of our money to only do two feet. So  
22 that is -- that is where the waste lies. Yeah, just  
23 talking budget here.

24 **MR. NILES:** Thank you.

25 **FEMALE SPEAKER:** I am Robbie. I live in

1 Hood River.

2 I have a little scar in my throat. I am  
3 able to talk. I have thyroid cancer. The only  
4 known cause of thyroid cancer is radiation.

5 Plutonium is not a friendly element in its  
6 form there, and saying we are going to go down two  
7 feet and get 50 percent of the plutonium is not  
8 cleaning up. I think it is like spelling. I used  
9 to get every letter right except one, and I still  
10 missed the word for knowing how to spell it.

11 Leaving 50 percent of the plutonium in the  
12 ground is not cleaning it up. I don't know a lot  
13 about running the operational. So it is an  
14 operational model. Instead we are going to do two  
15 feet, we are going to dig until it's, you know, only  
16 a certain percentage of what's come up would be much  
17 better. To go after 99 percent of it is just more  
18 realistic.

19 Covering something with 15 feet of soil, I  
20 presume that in Hanford they have winds, and there  
21 is water erosion. And 15 feet of soil for 10,000  
22 years or for what is -- for -- anyway it is not  
23 enough. And it needs to be -- what needs to be  
24 required is to have it sent to New Mexico. That's  
25 my bottom line, and I am glad that we know a lot

1 more about radiation and it's gift and limitations.

2 I will say that in Japan all of the  
3 nuclear power plants had to be renegotiated with how  
4 safe they are because of the just upping the  
5 earthquake to a 9.0 earthquake. They had to be  
6 reevaluated. So I think evaluating this for seismic  
7 activity is an excellent idea to make it safer.

8 Thank you.

9 **MALE SPEAKER:** I am Keith Harding. I live  
10 in the upper Hood River valley.

11 Hanford is our father's curse on us, and  
12 how we deal with it or don't deal with it is our  
13 curse on our kids and grand kids.

14 If you are a student of history, you will  
15 find a lot of stuff written down that passed  
16 generations of humans didn't care much about future  
17 generations. They said things like: What the hell  
18 did the future ever do for us? Or they will deal  
19 with it when they get here. And you will also find  
20 comments such as Thomas Jefferson in his first  
21 inaugural address of 1801 where he said: All their  
22 actions at that time should be -- the impact on the  
23 thousandth generation into the future should be  
24 considered. What they do in 1801 should be  
25 considered a thousand generations into the future,

1 and if that is 25 years per generation, that is  
2 25,000 years.

3 I have been attending these meetings for  
4 over 20 years now, and nuclear science and chemical  
5 science is not my expertise at all. So I sit and  
6 listen and listen to the agency people, and the  
7 contractors speak, and a lot of the folks seem very  
8 sincere. JD, you sounded very sincere tonight.  
9 There has been some that did not sound so sincere.  
10 I do know that it is real easy, and I sit and think  
11 and listen. So I try to say something that might be  
12 a different twist on it that might be a way to get  
13 into the agency's mind.

14 And I do know there is a phenomenon of  
15 simply becoming a functionary in an agency -- I  
16 worked in government for 20 years. I know something  
17 about it -- to become a functionary and to pace  
18 yourself through it and get to the retirement. And  
19 we have seen several of the characters before you do  
20 exactly that, and now they are nicely retired with  
21 their benefits.

22 I want to really see it get drilled in,  
23 bolted and riveted into the agency because this  
24 agency and the AEC before DOE was the villain, and  
25 it still is. We need a real deep track record to

1 develop.

2 Over these past 20 years, we have heard  
3 reclassification from a higher level to lower level.  
4 We have heard redefinitions of terms, and I don't  
5 understand hardly any of this stuff, but I have a  
6 feel for it, and especially listening to you great  
7 people out in the audience. And I totally agree  
8 with Hafiz when he says it is bloody arrogant to  
9 think this civilization is going to be around. I  
10 mean I can see it collapsing a lot sooner than 200  
11 years more. It is very important to get a deep mind  
12 set into the agency, into human beings to get  
13 reconnected with the earth that gives us life.

14 The nuclear program in 1944 was wrong  
15 then, and it is still wrong, and you need to really  
16 clean it up, get really committed to it. I have got  
17 lovely young children, and I work with preschool  
18 kids all the way down to diapers, and I have to  
19 think about them.

20 All right. So do your best and don't  
21 schmooze on it. Thanks.

22 **MR. NILES:** Thank you, Keith.

23 Before we go on, could I get a quick show  
24 of hands again how many folks would like to make  
25 comments?

1 I would like to check in with our court  
2 reporter and see if you need a break at all.

3 **THE REPORTER:** No. Go ahead.

4 **MR. NILES:** Okay. Thank you. She is  
5 stuck there more than any of us.

6 Go ahead, ma'am.

7 **FEMALE SPEAKER:** Chandra Radiance. I am a  
8 Hood River resident, and I, too, have been coming to  
9 these meetings for 20 years. Unfortunately, they go  
10 on and on.

11 I am going to keep my testimony brief, and  
12 I second the points made by Hearts of America. So I  
13 am just going to put them down here.

14 I demand a better approach than remove,  
15 treat and dispose. DOE's plan does not protect the  
16 public from long-term plutonium risks. Plutonium is  
17 one of the deadliest substances on the plant.  
18 Internal exposure to plutonium causes cancer.

19 The DOE plans to leave large quantities of  
20 plutonium in the soil in the waste sites it has  
21 identified for cleanup in the central plateau. This  
22 is unacceptable. Simply put, DOE should dig deeper,  
23 remove as much plutonium as possible and send this  
24 long-lived waste to a deep geologic repository at  
25 the waste isolation pilot project in New Mexico.

1 Two: Given the extremely long half lives  
2 of plutonium of 24,000 years and other contaminates,  
3 DOE and EPA cannot assume that leaving this  
4 contamination is protected. DOE's plan rests on the  
5 false assumption that plutonium in the soil will  
6 remain immobile for thousands of years. Given the  
7 highly dynamic geology of the Columbia River basin  
8 over tens and thousands of years, DOE should not  
9 make this assumption.

10 Additionally, DOE's own sampling shows  
11 that plutonium has migrated deep into the soil.  
12 Clearly plutonium poses a long-term risk to  
13 groundwater and the Columbia River.

14 Three: DOE should consider a broader  
15 range of alternatives for cleaning up these waste  
16 sites. DOE's proposed plan stops short of an  
17 adequate cleanup, leaving waste below two feet under  
18 the bottom of its liquid waste disposal sites in  
19 place.

20 DOE argues that other alternatives such as  
21 digging down 37 feet will be too expensive. At the  
22 very least DOE should aim to remove 90 percent of  
23 the plutonium as it proposed to do in other areas  
24 such as the low-salt waste sites. Or DOE should  
25 remove rather than cap cesium waste sites.

1 DOE rejected an alternative that would  
2 have involved digging down 15 feet into cesium-  
3 polluted and highly-radioactive areas in the 200  
4 east area. Instead DOE proposes to add a soil cap  
5 over these areas. We urge DOE to reconsider the  
6 more protective alternative of digging up the cesium  
7 waste sites.

8 And, five, focus on remove, treat,  
9 dispose.

10 The public has long advocated for a  
11 process of cleanup of the Hanford site by removing,  
12 treating and disposing of radioactive and chemical  
13 wastes in a manner that protects the public. DOE's  
14 proposal falls short of this goal. The Hanford  
15 advisory board summarized its concern with the  
16 proposed plan in the following statement: "The  
17 board advises the U.S. Department of Energy to get  
18 as much plutonium out of these waste sites as  
19 possible."

20 Thank you very much.

21 **MR. NILES:** Thank you.

22 **MALE SPEAKER:** My name is Bob Ruder. I  
23 live in White Salmon, Washington.

24 And I am just really encouraged by the  
25 desire to take advantage of this opportunity to make

1 the Hanford site safe by everyone here, and I think  
2 that this is an unbelievable opportunity, and that  
3 we have come together at a time when we are making  
4 some real decisions about what is going to happen in  
5 realtime.

6           And I think that it is very difficult to  
7 take what we consider as realtime and try to make  
8 the leap to the dangers of plutonium over what is  
9 really unimaginable time as far as I am concerned,  
10 and that given those sets of constructs of what we  
11 think of as realtime and what we think of as  
12 unimaginable time, I think it really moves us to  
13 take advantage of this opportunity and to clean the  
14 site up completely because in the other imaginable  
15 period of time we don't know what will happen, you  
16 know.

17           People have highlighted many possibilities  
18 that would make the present proposal for cleanup  
19 completely a waste of time and energy and money and  
20 resources, and so to really clean the site up for  
21 all the future involves the complete removal and  
22 repository of the contaminated waste.

23           **MR. NILES:** Thank you.

24           Other folks who would like to make a  
25 comment?

1 Let me remind you if there is  
2 conversations you want to have with any of the  
3 agency people, they are willing to stick around and  
4 talk with you at the end of the meeting.

5 **MALE SPEAKER:** Can I make a second  
6 comment?

7 **MR. NILES:** Yes, you can, but let me see  
8 if there are others that haven't made one that want  
9 to make one. So let's go to them first. And, yes,  
10 you can make a second comment.

11 **FEMALE SPEAKER:** Karen Harding, Mt. Hood.  
12 I vote that we clean it up 100 percent  
13 even if it takes a zillion dollars. The future  
14 deserves that from us.

15 **MR. NILES:** I think you had one other hand  
16 back there. Maybe not. Then bring it back up here,  
17 please. Thank you.

18 **MALE SPEAKER:** I would like to observe  
19 that in my lifetime nuclear power has gone from  
20 being too cheap to meter to too expensive to  
21 calculate.

22 These things you are talking about is all  
23 downstream costs of nuclear power, and you have been  
24 struggling with this problem with all of our  
25 scientific advancement. Apparently, you know, we

1 are just on top of the world. We can do anything,  
2 and yet still there is no -- what is it -- approved  
3 disposal method. And there appears to be no  
4 approved disposal method in the near future. Now  
5 DOE, our wonderful steward, is proposing to bring  
6 thousands of truckloads of highly-radioactive waste  
7 to Hanford with no idea what they are going to do  
8 once they get it there. This doesn't sound like  
9 thousands years of stewardship to me.

10           Given the long-term failures of Hanford's  
11 tri-party agreement to realistically clean up what  
12 has gone before or plan for what will go on in the  
13 future, it seems to me that DOE should be giving us  
14 a break and you, a government agency, need to be  
15 taking the lead to the rest of the government to get  
16 off of their crazy crackpot idea and stop nuclear  
17 power. It is not sustainable. It gets more  
18 expensive every year. It is insanely expensive, and  
19 there is no end in sight for this. And for you to  
20 sit around and do your own little one box job -- my  
21 job description. I am not going farther -- is  
22 irresponsible and, to me, inhuman.

23           The bigger picture is nuclear power is  
24 insane, and you with your expertise and your  
25 experience need to take a political stand and

1 explain this to the political do-dos and those  
2 people who have fat pockets who are getting lined  
3 with more nuclear power plants and make it a no-go  
4 option. This is not a sustainable or scientifically  
5 -- not scientifically sustainable way to boil water  
6 and make electricity. It must stop.

7           There are much simpler, cheaper ways, and  
8 to continue on this path, just have our little  
9 meeting saying, "What should we do with this? What  
10 should we do with that," I mean you are just nickel-  
11 and-diming us death. You guys have the information  
12 to have the big picture.

13           Take it. Run with it. You are our  
14 employees. That is what I am challenging you to do.

15           **MR. NILES:** Gerry, looks likes you are the  
16 last floor here.

17           **MR. POLLET:** I want to thank everyone for  
18 coming and sticking with us this evening.

19           Remember, the Energy Department wouldn't  
20 have even stopped dumping liquid waste into the soil  
21 trenches without treatment if it wasn't for some of  
22 you here coming to meetings 20 years ago and  
23 sticking with it. You really make a difference.

24           And one of my comments tonight is the fact  
25 that we had far less than 45 days to provide public

1 notice of this. We were supposed to have 45 days  
2 under the Hanford cleanup publically involved in the  
3 plan called the new relations plan. And without 45  
4 days, River Keeper and Hearts of America Northwest  
5 cannot do a mailing to you and everyone else who  
6 wanted to be here tonight.

7           And I know that many of you helped out  
8 making phone calls and forwarding E-mails and  
9 Facebook announcements. Thank you for doing that  
10 because we would have had an empty room otherwise,  
11 and it is totally wrong for the agencies to put out  
12 a proposal, and say we will not give you 45 days of  
13 advanced notice for public meetings. The agencies  
14 didn't really want to have public meetings. So  
15 public involvement, advisory board and other people  
16 pushed hard, and they agreed to do public meetings,  
17 but they didn't really want you here. So they  
18 didn't give us 45 the days.

19           It is really important that we have 45  
20 days so we can do mailings, and it is really  
21 important later this year they are going to come out  
22 with a proposed revision to public involvement plan.  
23 I hope to see you all here with a lot of other  
24 people saying: If you don't give us 45 days, you  
25 don't get to go forward with your plan.

1           Secondly, if you don't give us access to  
2 the documents, public comment period doesn't start,  
3 and in this case if you look -- there was a proposed  
4 plan that is, frankly, a piece of garbage that was  
5 distributed if you went beyond the agencies' fact  
6 sheet, and then you wanted to see where was that  
7 real data, and you had a broken link to the  
8 administrative record. If you knew where the  
9 administrative record was, you received back a  
10 search query of 640 documents and versions like A  
11 through G of the feasibility study, and you are  
12 supposed to try to figure out which one was used.

13           I appreciate Dennis Falk's and the EPA's  
14 commitment that if we ask for it there will be an  
15 extension of the comment period, and we asked for it  
16 because, first off, you need to establish the  
17 principle that if the documents aren't available the  
18 comment period keeps going until you have had plenty  
19 of time to review them.

20           Secondly, in this case, for real, people  
21 trying to review these documents were reading the  
22 wrong damn documents because you didn't provide the  
23 right access to them. What did the documents say?  
24 Let's get to this.

25           **MR. NILES:** Gerry, we actually do have

1 somebody else that would like to comment.

2 **MR. POLLET:** I am just going to wrap up  
3 then.

4 If the Energy Department had obeyed the  
5 law after 1970, it would have stopped dumping liquid  
6 waste and untreated liquid waste into trenches,  
7 right? And it would have treated it and pulled out  
8 the plutonium, and the plutonium would have gone to  
9 WIPP eventually. Instead it is in the soil, and now  
10 the Energy Department should not be rewarded for  
11 having broken the law for 25 years by continuing to  
12 discharge it and then say, "We don't want to dig it  
13 up."

14 The Energy Department's proposed plan in a  
15 calculation we think is a gross underestimate says:  
16 Here is the lifetime cancer risk from these  
17 supposedly safe cesium sites that they are going to  
18 put 15 feet of dirt over or the Z-9 trench, which  
19 will only dig up two feet. If instead of an  
20 industrial worker, the area has subsistence farming,  
21 and the cancer risk from the Z-9 trench is 1.4 in 10  
22 lifetime cancer risk. 14 percent of the people  
23 exposed, instead of the industrial worker, if it is  
24 farmed 14 percent die of cancer.

25 If we look at the cesium trenches where we

1 are only going to put 15 feet of dirt on top, if we  
2 have made a mistake the cancer risk is -- get this --  
3 - 65 percent. Now, do you think we should dig it  
4 up?

5 Thank you.

6 **FEMALE SPEAKER:** My name is Jody Frank,  
7 and I live in Hood River.

8 And there has been some call for studies  
9 on seismic and floods and that sort of thing, but we  
10 live in the middle of the results of the Mazola  
11 floods. I think we kind of know what those studies  
12 are going to say. Could we just spend the money on  
13 digging the stuff up on getting rid of it, please.

14 Thank you.

15 **FEMALE SPEAKER:** I implore the Oregon DOE  
16 to not just rubber stamp the data provided by the  
17 federal DOE. Just know that for you to rubber stamp  
18 and agree to decision to, you know, take care of two  
19 feet is just based on very poor data, and you need  
20 to look a little deeper.

21 **MR. NILES:** We are in a Q and A, but it is  
22 not what I said.

23 **FEMALE SPEAKER:** That is how I heard it.  
24 So I am commenting how I heard it.

25 **MR. NILES:** Thank you. We did not agree

1 to that.

2 **FEMALE SPEAKER:** Unless I took incorrect  
3 notes, it said that you agree that the cesium can  
4 stay there.

5 **MR. NILES:** Yes.

6 **FEMALE SPEAKER:** And that the cesium does  
7 not move.

8 **MR. NILES:** Yes.

9 **FEMALE SPEAKER:** It does not move based on  
10 what data?

11 **MR. NILES:** Based on the chemical  
12 constituency of the soil.

13 **FEMALE SPEAKER:** Have you looked at the  
14 seismic?

15 **MR. NILES:** That wouldn't have an impact  
16 on the chemical.

17 **FEMALE SPEAKER:** So it wouldn't move? So  
18 cesium would not move even though there would be a  
19 5, 6, 7, 8.0 earthquake it wouldn't, just move stay  
20 right in its place forever and ever?

21 **MR. NILES:** It only needs about 300 years.  
22 We are get into a dialogue that we don't want to get  
23 into.

24 **FEMALE SPEAKER:** We want it 100 percent  
25 cleaned up now. We are not going to be here in a

1 hundred years, but our children and our children's  
2 will be. We want it cleaned up 100 percent.

3 **MR. NILES:** That's fine. We have got your  
4 comment.

5 Other comments?

6 **FEMALE SPEAKER:** Jade Sherrer, and I live  
7 here in Hood River, and I hearing the words  
8 protection and service a lot tonight, and I would  
9 just like to be a voice for the other-than-human  
10 world, for the more-than-human world, that also  
11 shares the environment and this planet and beg all  
12 of us to come to our senses to do everything,  
13 everything, everything possible to clean up this  
14 disaster now.

15 Thank you.

16 **MR. NILES:** Thank you.

17 And I think we have one comment here.

18 **FEMALE SPEAKER:** Thank you. Chandra  
19 Radiance, Hood River.

20 I just wanted to make a second comment  
21 requesting that you would clean up the plutonium up  
22 to at least the standards that has been set by the  
23 Lawrence Livermore Lab in California which is a  
24 thousand times more protective level of plutonium  
25 than what Hanford is currently allowing. I don't

1 remember the exact numbers, but I think you have  
2 knowledge of the 2.5 picocuries per gram instead of,  
3 whatever, 29,000 -- 2900.

4 **MR. NILES:** All right. Thank you again.  
5 We do appreciate it. Some really great comments,  
6 and people sticking this out on a really nice night.

7 So thank you again. We will see you again  
8 at some point.

9 **(At 9:30 p.m. the foregoing proceedings**  
10 **concluded.)**

11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

## 1 CERTIFICATE

2  
3 I, Michele J. Lucas, do hereby certify that  
4 the Rules of Civil Procedure, the witness named herein  
5 appeared before me at the time and place set forth in  
6 the caption herein; that at the said time and place, I  
7 reported in stenotype all testimony adduced and other oral  
8 proceedings had in the foregoing matter; and that the  
9 foregoing transcript pages constitute a full, true and  
10 correct record of such testimony adduced and oral  
11 had and of the whole thereof.  
12

13 IN WITNESS HEREOF, I have hereunto set my hand this  
14 29th day of July , 2011.  
15  
16  
17  
18  
19

20 /Signed August 2013  
21 Michele J. Lucas Commission Expiration  
22  
23  
24  
25

\$	308:23	345:1	304:21	333:16
<b>\$10,000</b>	319:20	<b>150</b> 304:13	<b>1980</b>	334:2
246:19	319:22	<b>15-foot</b>	329:20	335:9
246:23	321:20	264:7	<b>1986</b>	341:22
302:14	321:25	<b>16</b>	242:25	<b>200</b> 237:17
<b>\$100,000,000</b>	339:12	258:13	<b>1989</b>	237:18
246:20	346:24	274:7	242:23	250:2
<b>\$2</b> 303:5	347:2	<b>18</b>	243:5	250:3
	<b>11:00</b>	309:13	<b>1990s</b>	250:5
	318:14	312:15	307:2	250:12
	<b>110</b> 260:12	329:20	307:16	251:2
<u>1</u>	304:8	<b>1801</b>	<b>1992</b> 243:4	251:20
<b>1</b> 237:19	309:18	332:21	293:6	253:22
<b>1,000</b>	312:14	332:24	293:11	254:14
328:6	<b>120</b> 272:21	<b>190</b> 285:5	<b>1994</b>	262:8
<b>1.4</b> 344:21	272:24	<b>1944</b>	313:16	262:8
<b>10</b>	304:24	334:14	<b>1995</b> 273:9	262:15
240:12	<b>13</b> 271:2	<b>1959</b>	<b>1998</b>	279:1
271:1	293:9	273:19	293:10	280:1
293:11	293:10	273:24		280:5
304:22	<b>14</b>	293:10	<u>2</u>	334:10
304:24	344:22	304:21	<b>2</b> 258:14	337:3
344:21	344:24	<b>1960s</b>	<b>2,900</b>	<b>2001</b> 293:6
<b>10,000</b>	<b>14,000</b>	307:2	275:13	<b>2002</b>
245:7	269:19	<b>1965</b>	275:20	305:16
245:11	252:17	242:22	<b>2.4</b> 288:9	<b>2005</b> 293:8
288:24	256:7	<b>1970</b>	<b>2.5</b> 348:2	<b>2006</b>
288:24	258:3	314:14	<b>2.6</b> 288:9	243:11
306:1	262:6	314:21	<b>20</b> 239:1	293:8
306:9	271:22	316:13	266:21	293:11
311:10	274:14	344:5	273:10	305:16
326:4	304:23	<b>1972</b> 307:3	282:17	<b>200-PW-1</b>
326:7	304:24	307:6	309:13	258:14
327:6	308:22	<b>1979</b>	309:14	<b>2011</b> 230:3
328:18	331:19	272:23	325:19	<b>21</b>
329:3	331:21	274:1	326:8	231:13
329:7	337:2	274:11	333:4	250:11
331:21	344:18			251:11
<b>100</b> 252:24				251:18
292:18				

298:5	<b>2900</b> 348:3	<u>5</u>	<u>7</u>	<u>A</u>
<b>22</b>	<u>3</u>	<b>5</b> 254:14	<b>7</b> 346:19	<b>ability</b>
260:23	<b>3</b> 233:16	346:19	<b>7:01</b> 230:4	246:11
313:2	237:19	<b>5,000</b>	<b>70</b> 272:4	246:11
<b>220</b> 239:21	258:14	328:1	316:12	312:2
<b>225</b> 304:11	<b>30</b>	<b>50</b>	316:13	<b>able</b>
<b>24,000</b>	257:16	268:16	<b>70s</b> 292:21	232:18
268:3	292:20	274:18	<b>75</b> 240:10	246:20
269:2	<b>300</b> 304:16	299:17	<b>77</b> 316:11	252:1
314:1	323:5	331:7	<u>8</u>	296:4
322:5	346:21	331:11	<b>8</b>	331:3
326:5	<b>35</b> 327:10	<b>500</b> 328:7	<b>8</b> 288:10	<b>absolutely</b>
327:6	<b>37</b> 336:21	<b>50s</b> 305:24	292:4	231:1
336:2	<u>4</u>	<b>51</b> 309:14	<b>8.0</b> 346:19	315:16
<b>240,000</b>	<b>40</b>	<b>53</b> 280:24	<b>800</b>	<b>absurd</b>
269:4	257:16	<b>562</b> 272:1	313:3	327:24
306:10	274:18	<b>586</b> 238:24	313:4	328:9
327:6	304:25	<u>6</u>	<b>84</b> 309:15	329:4
<b>24th</b>	<b>40,000</b>	<b>6</b> 233:16	<b>85</b> 266:14	<b>accept</b>
321:12	326:5	237:19	<u>9</u>	265:12
<b>25</b>	<b>404</b> 329:9	253:6	<b>9</b> 292:4	266:2
252:18	<b>412</b> 321:12	346:19	<b>9.0</b> 332:5	<b>acceptabil</b>
297:5	<b>4200</b>	<b>6,000</b>	<b>9:00</b>	<b>ity</b>
333:1	254:17	300:15	232:17	325:7
344:11	<b>44</b> 293:9	300:16	235:24	<b>acceptable</b>
<b>25,000</b>	<b>45</b>	<b>60</b> 274:18	<b>9:30</b> 348:9	268:9
333:2	304:25	<b>600</b> 312:15	<b>90</b> 271:1	<b>access</b>
<b>250</b> 302:24	341:25	<b>64</b> 309:17	336:22	259:13
304:12	342:1	<b>640</b> 343:10	<b>95</b> 271:2	296:2
304:13	342:3	<b>65</b>	<b>99</b>	296:4
304:16	342:12	240:11	309:17	310:16
<b>26</b> 230:3	342:18	303:2	324:6	343:1
<b>28</b> 253:23	342:19	345:3	331:17	343:23
<b>29,000</b>	342:24			<b>accessibil</b>
348:3				<b>ity</b>
<b>290</b> 239:14				296:14
				<b>accessible</b>

294:23	315:22	248:10	<b>adequacy</b>	325:11
294:24	328:22	254:17	237:3	<b>afterwards</b>
<b>according</b>	<b>actions</b>	255:16	<b>adequate</b>	235:21
280:6	248:25	255:21	268:18	<b>against</b>
<b>accurate</b>	251:7	256:20	336:17	285:6
317:8	332:22	257:19	<b>administra</b>	<b>agencies</b>
317:12	<b>active</b>	261:10	<b>tive</b>	232:11
<b>accurately</b>	290:12	272:3	294:18	233:9
291:16	290:22	276:16	343:8	233:11
<b>achieve</b>	312:24	280:25	343:9	240:24
235:25	<b>activist</b>	292:20	<b>adopt</b>	268:11
236:11	301:13	296:2	276:13	297:13
241:24	<b>activities</b>	302:9	<b>advanced</b>	342:11
241:25	251:15	306:23	342:13	342:13
257:10	253:18	309:12	<b>advancemen</b>	343:5
<b>acid</b> 288:9	<b>activity</b>	315:24	<b>t</b> 339:25	<b>agency</b>
<b>acidic</b>	289:24	315:24	<b>advantage</b>	231:25
252:22	290:3	329:18	337:25	233:8
288:6	290:8	343:25	338:13	249:19
<b>acknowledg</b>	290:15	<b>acute</b>	<b>advises</b>	267:25
<b>ment</b>	290:17	247:2	337:17	299:5
317:2	290:18	<b>add</b> 269:18	<b>advisory</b>	333:6
<b>acronym</b>	290:20	308:12	268:10	333:15
256:20	290:24	320:21	271:9	333:23
<b>across</b>	290:25	337:4	301:12	333:24
252:3	317:2	<b>adding</b>	322:10	334:12
290:21	317:9	259:12	337:15	339:3
319:16	317:13	312:18	342:15	340:14
<b>Act</b> 329:17	332:7	<b>addition</b>	<b>advocated</b>	<b>agency's</b>
<b>acting</b>	<b>actual</b>	236:13	337:10	333:13
257:4	237:14	<b>Additional</b>	<b>AEC</b> 333:24	<b>agenda</b>
<b>action</b>	304:7	<b>ly</b>	<b>affect</b>	237:6
249:3	320:17	336:10	287:13	<b>ago</b> 230:23
256:12	<b>actually</b>	<b>address</b>	<b>afford</b>	248:6
259:9	243:4	251:8	231:3	269:19
262:16	246:11	263:3	<b>afraid</b>	269:24
315:11	247:7	286:1		270:14
	247:23	301:11		273:9
	248:1	332:21		285:4

287:22	<b>allowed</b>	256:11	286:8	344:2
302:6	252:22	257:12	287:2	345:24
303:11	317:11	257:25	288:14	<b>amenable</b>
307:20	<b>allowing</b>	259:7	288:15	296:23
321:18	347:25	260:7	290:14	<b>America</b>
321:23	<b>allows</b>	263:14	291:14	232:5
327:25	261:10	263:18	292:1	267:8
328:1	<b>alluded</b>	263:19	292:4	268:12
328:18	316:18	263:21	292:7	271:18
341:22	<b>alone</b>	281:15	294:8	328:8
<b>agreed</b>	262:7	301:23	295:5	335:12
342:16	328:8	301:24	295:7	342:4
<b>agreement</b>	<b>already</b>	336:15	295:12	<b>American</b>
233:9	261:18	336:20	296:16	246:17
303:15	276:7	<b>am</b>	297:11	<b>americium</b>
340:11	276:11	233:24	304:20	252:11
<b>agreements</b>	295:17	235:18	305:5	253:17
248:19	312:2	235:25	305:11	256:8
263:5	312:4	237:6	305:13	259:2
<b>ahead</b>	<b>alternativ</b>	237:11	305:14	<b>amount</b>
251:10	<b>e</b>	238:23	306:3	244:21
254:5	232:3	239:4	306:3	268:1
297:11	249:1	244:5	306:18	312:1
319:7	254:4	244:24	313:20	<b>amounts</b>
335:3	258:1	246:22	318:24	234:12
335:6	259:9	247:6	319:2	251:16
<b>aim</b> 336:22	260:16	247:7	325:18	270:15
<b>ain't</b>	270:21	248:13	329:5	270:18
274:20	270:24	249:19	329:18	272:10
276:1	293:17	259:6	329:23	272:22
<b>air</b> 329:25	328:21	263:15	330:25	273:1
<b>alarming</b>	337:1	264:5	331:2	282:13
305:7	337:6	264:14	331:25	307:4
<b>allow</b>	<b>alternativ</b>	264:21	332:9	308:2
265:21	<b>es</b> 248:2	267:3	335:7	<b>amplify</b>
266:3	248:4	270:5	335:11	244:12
266:6	250:21	277:14	335:13	<b>analysis</b>
297:14	252:2	278:16	337:24	263:7
	254:6	281:7	338:9	265:15
		282:7	340:21	
		282:9	341:14	

303:3	251:20	<b>appreciate</b>	286:19	243:3
<b>analyzed</b>	267:14	287:6	286:22	243:21
307:22	319:5	294:9	315:22	243:24
<b>ancestors</b>	<b>anything</b>	295:16	316:19	244:4
328:18	256:16	297:3	<b>appropriat</b>	244:16
<b>and-diming</b>	261:4	329:12	<b>ely</b>	244:22
341:11	261:4	343:13	316:3	244:23
<b>announceme</b>	279:17	348:5	317:8	245:14
<b>nts</b>	279:21	<b>approach</b>	<b>approved</b>	249:7
342:9	295:6	237:7	340:2	249:25
<b>annual</b>	297:21	238:7	340:4	249:25
308:13	307:24	245:14	<b>aqueous</b>	250:1
<b>annually</b>	322:1	245:21	288:5	250:2
308:15	326:6	252:4	<b>arbitraril</b>	250:3
<b>answer</b>	326:14	264:8	<b>y</b>	250:4
232:8	340:1	266:18	266:23	250:9
267:9	<b>anyway</b>	267:22	<b>area</b>	250:14
282:2	327:13	268:8	238:22	250:18
284:15	331:22	311:22	238:25	251:8
289:15	<b>anywhere</b>	322:9	239:2	254:15
304:4	314:2	322:17	239:18	254:19
304:5	<b>apologize</b>	335:14	239:18	258:9
306:23	324:22	<b>approached</b>	240:8	261:3
306:24	<b>Apparently</b>	230:23	240:10	269:1
309:25	339:25	<b>appropriat</b>	240:11	269:21
318:19	<b>appear</b>	<b>e</b>	240:12	275:4
320:4	266:12	258:4	240:14	279:13
<b>answered</b>	<b>appears</b>	261:2	240:14	279:16
235:24	340:3	282:6	241:2	280:3
<b>answering</b>	<b>applicable</b>	282:19	241:3	287:19
286:23	252:5	282:20	241:5	287:24
314:11	<b>apply</b>	284:22	241:10	288:1
<b>ant</b>	252:2	285:10	241:14	288:10
325:14	261:25	285:17	241:19	290:12
<b>anymore</b>	315:3	285:18	242:10	291:14
310:23	315:4	285:19	242:11	292:18
314:2	315:8	285:24	242:14	292:19
<b>anyone</b>	315:8	285:25	242:16	297:24
	321:22	286:6	242:16	304:8
		286:9	242:18	305:10
			242:20	305:17

305:17	337:5	288:20	<b>audience</b>	310:21
306:19	<b>aren't</b>	296:9	334:7	<b>bad</b> 255:16
306:21	343:17	308:13	<b>available</b>	313:6
308:14	<b>arguably</b>	<b>assistant</b>	238:8	325:11
310:4	292:16	234:21	283:10	<b>balance</b>
310:6	<b>argued</b>	<b>assisting</b>	294:10	248:3
310:15	271:10	289:3	294:19	300:11
310:19	<b>argues</b>	<b>assume</b>	294:20	311:22
310:20	336:20	292:13	295:10	312:7
312:22	<b>argument</b>	313:25	295:23	<b>balanced</b>
324:13	244:17	336:3	296:6	245:21
327:23	288:8	<b>assuming</b>	302:7	<b>balances</b>
337:4	288:8	282:7	318:4	246:13
344:20	<b>areas</b>	282:9	343:17	<b>balancing</b>
237:8	<b>Arid</b>	326:20	<b>average</b>	246:1
237:16	239:16	326:21	275:4	246:3
240:9	<b>arrogance</b>	<b>assumption</b>	<b>aware</b>	<b>barely</b>
240:21	313:25	268:19	269:23	233:18
241:19	<b>arrogant</b>	268:24	<b>away</b>	<b>barrier</b>
242:15	328:10	269:6	271:23	257:2
243:16	334:8	269:8	<hr/>	259:12
244:13	<b>art</b> 289:1	292:4	B	259:15
246:3	<b>aspect</b>	312:21	<b>backed</b>	261:8
247:22	315:7	327:22	326:22	261:12
249:16	<b>aspects</b>	336:5	<b>backfill</b>	261:25
254:10	271:16	336:9	256:21	287:4
254:11	<b>assess</b>	<b>assumption</b>	261:3	287:8
258:11	245:17	<b>s</b>	264:7	305:2
258:15	245:18	311:7	264:9	<b>barriers</b>
265:8	263:5	326:20	<b>backfilled</b>	256:25
280:1	291:19	<b>assure</b>	261:5	257:1
280:2	<b>assessed</b>	262:5	<b>background</b>	261:7
292:16	260:14	<b>Atomic</b>	236:7	269:7
303:2	316:19	313:11	249:15	<b>base</b>
303:9	<b>assesses</b>	<b>attending</b>	249:22	256:14
303:25	305:25	333:3	254:9	288:9
305:18	<b>assessment</b>	<b>attorneys</b>	280:17	<b>based</b>
312:25		330:9	<b>backhoe</b>	245:15
336:23				
337:3				

245:15	302:17	232:2	328:10	<b>Bob</b> 337:22
245:20	307:7	<b>behind</b>	343:5	<b>bogus</b>
251:24	<b>basin</b>	289:20	<b>bigger</b>	317:14
287:20	269:20	304:6	340:23	<b>boil</b> 341:5
290:9	336:7	<b>beings</b>	<b>Bill</b>	<b>bolted</b>
291:13	<b>basis</b>	334:12	235:13	333:23
292:1	266:12	<b>belief</b>	<b>bind</b> 266:1	<b>bombs</b>
292:21	274:10	328:10	<b>bit</b> 230:21	272:5
309:23	316:8	<b>believable</b>	231:2	272:6
316:23	316:15	329:2	231:23	327:11
317:1	329:6	<b>believe</b>	236:23	<b>bore</b> 274:9
317:5	330:20	274:12	250:7	293:3
317:12	<b>bear</b> 273:5	310:14	253:4	293:3
317:23	280:18	328:8	259:10	293:7
323:7	<b>bears</b>	<b>beneath</b>	260:10	293:8
323:8	249:11	250:25	279:7	302:13
323:9	<b>became</b>	287:4	305:3	<b>bottom</b>
323:10	243:7	<b>benefits</b>	<b>bits</b>	252:8
330:8	249:23	333:21	231:11	252:21
345:19	251:12	<b>Berger</b>	<b>blend</b>	256:5
346:9	<b>become</b>	324:22	275:4	279:10
346:11	333:17	<b>best</b>	<b>bloody</b>	291:3
<b>basic</b>	<b>becomes</b>	301:24	334:8	309:11
288:9	245:6	304:5	<b>Blue</b>	331:25
294:3	328:21	322:13	281:15	336:18
<b>basically</b>	<b>becoming</b>	334:20	283:6	<b>bowl</b>
248:22	333:15	<b>bet</b> 273:16	<b>bluffs</b>	243:14
249:15	<b>bed</b> 253:12	<b>better</b>	269:25	<b>box</b> 340:20
250:1	<b>beg</b> 347:11	236:23	270:1	<b>break</b>
254:11	<b>begin</b>	251:23	<b>board</b>	234:17
257:2	266:18	289:2	268:10	335:2
257:15	<b>beginning</b>	297:14	271:9	340:14
259:22	236:19	323:16	301:12	<b>breaking</b>
259:24	236:20	323:25	322:10	269:20
261:9	<b>begun</b>	331:17	337:15	<b>breaks</b>
261:23	318:15	335:14	337:17	327:24
279:8	<b>behalf</b>	<b>beyond</b>	342:15	<b>Briant</b>
279:8				
283:19				
293:4				
293:5				

235:10	237:17	294:4	328:16	308:17
315:24	240:9	<b>burial</b>	<b>cancer</b>	314:7
<b>brief</b>	240:10	243:2	314:8	332:16
230:12	258:15	280:20	331:3	345:18
234:24	296:9	284:4	331:4	<b>Carlson</b>
236:3	343:7	298:10	335:18	325:17
236:20	344:11	298:16	344:16	<b>cars</b>
238:6	<b>brought</b>	299:10	344:21	329:24
263:13	265:4	299:13	344:22	<b>cascade</b>
288:2	284:23	314:23	344:24	290:18
323:2	287:17	316:20	345:2	<b>case</b>
335:11	316:2	<b>buried</b>	<b>cap</b>	231:24
<b>briefly</b>	326:11	273:15	310:4	260:23
233:14	<b>brown</b>	290:11	310:4	311:21
237:6	240:11	297:22	310:5	312:7
238:24	240:12	298:11	311:4	343:3
264:14	<b>budget</b>	298:12	324:17	343:20
282:9	231:2	<b>Burk</b>	336:25	<b>case-by-</b>
<b>bring</b>	245:20	235:13	337:4	<b>case</b>
264:9	246:18	<hr/>	<b>capacity</b>	316:15
285:16	273:13	C	281:11	<b>cases</b>
293:17	330:17	<b>calculate</b>	281:14	252:15
294:22	330:23	339:21	281:14	<b>cause</b>
319:14	<b>build</b>	<b>calculated</b>	300:11	331:4
322:18	243:24	314:9	300:14	<b>causes</b>
339:16	327:10	<b>calculatio</b>	<b>capped</b>	335:18
340:5	<b>building</b>	n 344:15	310:24	<b>cautious</b>
<b>bringing</b>	274:16	<b>Calhoun</b>	<b>caps</b> 269:5	322:8
264:6	301:2	326:15	<b>car</b> 326:8	322:17
284:13	<b>buildings</b>	<b>California</b>	<b>carbon</b>	<b>caves</b>
286:20	239:25	275:14	259:2	322:18
303:12	318:9	276:14	259:22	<b>cental</b>
<b>broad</b>	<b>builds</b>	324:4	259:25	242:5
268:8	317:16	347:23	260:4	<b>centimeter</b>
<b>broader</b>	<b>built</b>	<b>Cameron</b>	288:5	s 292:20
336:14	281:4	235:18	323:10	<b>central</b>
<b>broke</b>	328:1	235:19	<b>care</b>	234:22
252:5	<b>bunch</b>	<b>camps</b>	273:14	
<b>broken</b>			274:4	

240:7	265:24	320:20	<b>chemical</b>	293:23
240:8	265:25	<b>changed</b>	283:17	<b>citizens</b>
241:18	266:1	314:6	283:22	297:14
241:24	266:3	<b>changes</b>	284:1	<b>city</b>
242:9	266:8	248:10	292:8	238:25
249:25	266:9	265:5	294:3	<b>civilizati</b>
251:13	272:10	<b>changing</b>	333:4	<b>on</b> 334:9
269:17	322:15	304:19	337:12	<b>clamorous</b>
272:1	323:9	<b>characteri</b>	346:11	254:19
275:12	336:25	<b>ze</b>	346:16	<b>clarificat</b>
288:22	337:2	293:21	<b>chemicals</b>	<b>ion</b>
304:15	337:6	<b>characteri</b>	272:10	277:4
306:4	344:17	<b>zed</b>	274:3	277:20
311:10	344:25	291:25	274:4	<b>clarify</b>
335:21	346:3	305:16	306:20	232:7
<b>CERCLA</b>	346:6	305:19	<b>chemistry</b>	232:8
244:1	346:18	<b>characteri</b>	265:15	267:9
245:23	<b>cesium-137</b>	<b>zes</b>	265:20	286:18
247:8	253:20	254:23	265:24	320:1
247:9	258:19	305:22	<b>children</b>	<b>class</b>
248:5	259:4	<b>characters</b>	334:17	257:20
256:11	262:3	333:19	347:1	285:2
273:20	<b>challenges</b>	<b>Charboneau</b>	273:16	<b>classified</b>
315:9	301:6	235:10	347:1	319:17
329:17	301:7	<b>charge</b>	<b>children's</b>	<b>clay</b>
<b>certain</b>	<b>challengin</b>	257:18	273:16	304:10
265:21	<b>g</b> 244:20	<b>chart</b>	347:1	<b>clean</b>
293:4	341:14	305:21	<b>choices</b>	251:6
331:16	<b>chance</b>	<b>cheap</b>	301:24	256:22
<b>certainly</b>	236:5	339:20	<b>choose</b>	261:3
322:16	236:16	<b>cheaper</b>	270:11	261:3
<b>cesium</b>	<b>Chandra</b>	341:7	<b>chosen</b>	261:5
234:15	335:7	<b>cheaply</b>	273:2	272:8
250:4	347:18	245:20	<b>circle</b>	272:13
253:23	<b>change</b>	<b>check</b>	241:9	275:19
256:9	237:25	335:1	<b>cities</b>	276:16
264:6	310:1		239:1	328:20
264:23	310:22		325:3	334:16
265:10	311:5		329:18	
265:12			<b>citing</b>	

338:13	270:17	<b>closely</b>	308:6	329:12
338:20	271:10	291:18	308:14	335:8
339:12	271:21	<b>closer</b>	336:7	341:18
340:11	275:5	250:8	336:13	341:22
347:13	275:12	304:17	<b>column</b>	<b>comment</b>
347:21	275:14	304:18	252:16	232:13
<b>cleaned</b>	275:22	<b>closure</b>	252:20	233:15
239:4	276:1	248:22	252:23	236:3
346:25	276:8	<b>coal</b> 243:6	257:6	236:20
347:2	276:13	<b>collapsing</b>	257:8	262:22
<b>cleaning</b>	300:12	334:10	293:5	262:23
284:8	300:23	<b>collect</b>	304:19	263:6
330:18	300:24	247:18	<b>combinatio</b>	263:7
331:8	321:20	247:18	<b>n</b> 257:24	263:13
331:12	321:23	253:8	<b>combined</b>	264:18
336:15	321:25	302:21	235:9	267:20
<b>cleanup</b>	324:2	302:24	<b>comes</b>	277:5
230:19	324:5	<b>collected</b>	236:14	277:17
231:11	324:6	308:10	249:2	278:2
233:10	335:21	<b>collecting</b>	281:17	278:20
236:12	336:17	303:1	283:14	291:18
237:7	337:11	<b>co-located</b>	283:21	294:9
238:6	338:18	245:18	314:14	295:13
238:11	342:2	<b>colors</b>	316:17	295:17
238:18	<b>clear</b>	250:1	319:23	295:21
239:8	295:10	<b>Columbia</b>	<b>comfortabl</b>	296:2
240:16	327:1	232:4	<b>e</b>	296:5
242:11	327:2	267:7	321:2	296:21
243:7	<b>clearly</b>	267:21	321:6	296:22
250:15	260:13	269:20	<b>coming</b>	303:23
250:16	291:24	269:23	230:6	309:22
250:19	295:24	272:13	231:8	310:7
250:21	336:12	275:18	235:1	311:1
251:7	<b>close</b>	276:15	271:19	313:7
252:2	239:23	306:19	276:17	318:6
252:4	240:3	307:1	281:23	318:8
253:3	255:17	307:16	320:22	318:15
264:11	271:7	308:5	321:15	318:18
264:16	279:14		325:19	319:5
270:10	279:25			320:10
				320:13

320:20	311:14	334:16	312:9	299:13
321:11	317:4	<b>common</b>	<b>components</b>	318:25
321:25	317:20	287:17	318:2	319:2
330:13	318:22	<b>communicat</b>	330:2	324:3
338:25	318:25	<b>ions</b>	<b>concentrat</b>	338:9
339:6	320:2	235:15	<b>ing</b>	<b>concerns</b>
339:10	320:3	238:20	241:13	265:22
343:2	320:4	<b>community</b>	<b>concentrat</b>	<b>concise</b>
343:15	320:8	235:15	<b>ion</b>	282:2
343:18	321:1	<b>compact</b>	262:19	<b>concluded</b>
344:1	322:22	304:10	310:10	348:10
347:4	323:1	<b>comparable</b>	319:23	<b>conclusion</b>
347:17	326:24	309:9	<b>concentrat</b>	268:13
347:20	327:13	<b>compared</b>	<b>ions</b>	270:22
<b>commenting</b>	327:16	242:11	260:19	<b>concrete</b>
265:3	329:13	272:16	262:20	272:21
345:24	332:20	<b>compelling</b>	<b>concentric</b>	<b>condense</b>
<b>comments</b>	334:25	319:4	241:9	259:25
230:16	341:24	<b>complete</b>	<b>concept</b>	<b>condition</b>
232:2	347:5	255:21	236:18	287:18
232:11	348:5	322:9	240:13	288:23
237:2	<b>commercial</b>	338:21	240:18	293:14
247:12	281:20	<b>completed</b>	240:20	325:25
248:18	<b>Commission</b>	300:25	243:21	<b>conditioni</b>
248:20	313:11	<b>completely</b>	249:12	<b>ng</b>
262:24	<b>commit</b>	310:3	309:25	326:19
262:24	317:23	338:14	<b>concepts</b>	<b>conditions</b>
263:2	<b>commitment</b>	338:19	242:7	260:3
263:6	244:22	<b>completion</b>	<b>concern</b>	326:13
264:4	245:9	238:18	258:20	<b>condos</b>
264:19	245:12	<b>complex</b>	260:12	243:24
264:21	249:9	242:14	298:21	<b>conduct</b>
267:5	289:14	309:25	303:2	245:23
275:25	295:16	<b>complicate</b>	337:15	<b>conferred</b>
276:18	316:9	d 261:20	244:6	270:13
276:19	343:14	290:14	266:11	<b>confident</b>
276:21	<b>committed</b>	290:16	287:10	266:1
276:23	317:21			
277:6	318:6			
297:1	318:10			
309:22				

293:18	332:25	<b>contaminat</b>	260:17	<b>core</b> 287:7
326:22	<b>considerin</b>	<b>ed</b> 234:3	274:5	<b>Corey</b>
<b>configurat</b>	<b>g</b> 330:8	249:23	309:21	330:14
<b>ion</b>	<b>consistent</b>	250:4	344:11	<b>corner</b>
318:2	230:15	250:6	<b>continuous</b>	310:17
<b>configurat</b>	265:14	250:24	240:15	<b>corps</b>
<b>ions</b>	265:19	251:4	243:18	243:3
255:6	328:6	251:13	269:16	<b>correct</b>
<b>confirmato</b>	<b>constantly</b>	252:11	<b>contractor</b>	234:22
<b>ry</b>	260:1	253:17	235:9	260:19
307:19	304:19	253:22	235:13	279:22
<b>confirmed</b>	<b>constituen</b>	256:21	<b>contractor</b>	285:20
307:23	<b>cy</b>	258:2	<b>s</b> 333:7	313:17
<b>confuse</b>	346:12	260:22	<b>control</b>	315:16
281:22	<b>constituen</b>	293:6	244:3	323:24
<b>confused</b>	<b>ts</b>	297:20	246:12	<b>corrective</b>
267:10	301:18	298:12	329:17	315:11
279:3	<b>construct</b>	338:22	<b>controlled</b>	<b>corridor</b>
<b>confusing</b>	261:6	<b>contaminat</b>	284:7	239:20
251:20	<b>constructi</b>	<b>es</b>	<b>controls</b>	239:22
280:18	<b>ng</b> 251:2	265:16	256:15	241:20
<b>consensus</b>	<b>constructi</b>	292:3	<b>controvers</b>	241:21
268:7	<b>on</b>	303:2	<b>ial</b>	290:19
268:13	274:16	336:2	268:7	<b>cost</b>
303:14	<b>constructs</b>	<b>contaminat</b>	<b>conversati</b>	246:13
<b>conservati</b>	338:10	<b>ion</b>	<b>ons</b>	246:15
<b>on</b>	<b>contain</b>	251:8	339:2	246:16
268:11	234:15	256:4	<b>convoluted</b>	302:12
<b>consider</b>	270:1	261:23	282:3	302:13
235:4	298:15	262:20	<b>cooling</b>	312:3
330:17	299:7	336:4	237:17	312:5
330:20	<b>contaminan</b>	<b>continue</b>	240:3	312:10
336:14	<b>ts</b>	242:1	254:14	314:8
338:7	274:11	303:13	255:23	<b>costly</b>
<b>considered</b>	<b>contaminat</b>	316:6	280:21	274:20
263:22	<b>e</b> 256:22	341:8	<b>copy</b>	<b>costs</b>
332:24	299:12	<b>continued</b>	264:17	242:2
		288:19		303:4
		<b>continuing</b>		

312:13	331:19	322:11	237:17	294:4
314:7	<b>coverup</b>	<b>crowd</b>	279:1	294:7
339:23	271:22	285:5	280:1	294:8
<b>Council</b>	271:22	<b>crux</b>	280:5	294:10
281:16	276:2	269:14	<b>cylinder</b>	294:23
283:6	<b>crackpot</b>	291:10	302:17	295:9
<b>country</b>	340:16	<b>curious</b>	302:19	295:19
328:4	<b>crap</b> 329:1	303:24	302:22	302:9
328:5	<b>crazy</b>	304:21		302:10
<b>couple</b>	340:16	305:5	D	308:10
231:19	<b>create</b>	305:11	<b>Dale</b>	308:11
232:1	279:23	306:18	235:14	317:5
264:15	<b>creating</b>	313:20	<b>damn</b> 273:3	317:6
265:7	284:8	<b>current</b>	343:22	317:13
269:24	<b>credulity</b>	254:14	<b>Dan</b>	318:3
278:6	327:25	259:3	267:7	323:3
303:21	<b>crib</b> 278:7	262:3	267:12	323:4
320:23	278:17	288:23	<b>dangerous</b>	323:7
327:17	<b>cribs</b>	<b>currently</b>	269:11	323:14
<b>courage</b>	252:13	251:2	269:13	323:21
236:8	278:3	347:25	<b>dangers</b>	323:22
236:21	<b>criteria</b>	<b>curse</b>	338:8	324:1
<b>court</b>	245:23	332:11	<b>dark</b>	326:23
277:8	245:25	332:13	249:25	343:7
335:1	246:1	<b>curve</b>	<b>Darrell</b>	345:16
<b>cover</b>	<b>critical</b>	323:17	323:18	345:19
236:1	246:23	323:20	<b>data</b>	346:10
238:24	<b>criticalit</b>	<b>custodians</b>	247:15	<b>Dave</b>
256:15	y 292:23	246:25	247:18	324:22
259:11	292:24	312:22	247:20	<b>day</b> 254:21
261:9	<b>cross</b>	<b>custody</b>	292:1	282:16
261:10	292:3	243:17	292:5	282:17
262:5	312:12	<b>cutting</b>	292:7	321:18
264:7	312:13	232:19	292:8	329:22
272:21	<b>cross-</b>	<b>CW</b> 237:18	292:9	<b>days</b>
<b>covered</b>	<b>balanced</b>	<b>CW-5</b>	292:24	341:25
235:17		233:16	293:22	342:1
<b>Covering</b>			293:24	342:4
				342:12
				342:18

342:20	285:14	293:19	<b>definite</b>	274:23
342:24	289:8	295:11	257:23	284:25
<b>deadliest</b>	289:10	298:23	<b>definition</b>	306:25
335:17	294:6	311:22	288:16	307:21
<b>deal</b> 239:9	296:12	316:16	<b>demand</b>	317:15
239:10	299:11	317:4	300:10	328:14
314:20	306:6	330:3	335:14	337:17
332:12	311:12	338:4	<b>demolition</b>	341:19
332:12	311:13	<b>deep</b>	301:2	344:4
332:18	312:7	252:16	<b>Dennis</b>	344:10
<b>death</b>	313:11	257:6	278:20	<b>Department</b>
341:11	317:22	274:19	286:8	's 273:6
<b>decade</b>	320:3	274:25	299:2	275:11
274:9	320:6	275:7	299:4	344:14
<b>decades</b>	320:17	276:4	316:18	<b>depicting</b>
288:12	323:23	293:7	343:13	251:12
<b>decay</b>	323:24	293:7	<b>dense</b>	<b>deploy</b>
266:3	325:1	293:8	304:10	246:12
<b>decide</b>	325:7	308:23	<b>department</b>	249:3
320:21	330:7	313:14	230:18	<b>depository</b>
325:4	345:18	313:21	230:22	315:19
<b>decided</b>	<b>decision-</b>	333:25	231:22	<b>depth</b>
255:18	<b>making</b>	334:11	233:5	252:24
323:19	294:2	335:24	234:21	253:23
330:9	330:1	336:11	235:2	264:7
<b>decision</b>	<b>decisions</b>	<b>deeper</b>	236:14	292:9
244:2	242:19	276:11	238:10	293:5
245:19	242:21	335:22	240:14	323:8
246:4	243:9	345:20	242:23	323:9
248:23	245:14	<b>deeply</b>	243:1	323:10
248:24	246:23	262:2	243:1	<b>describe</b>
249:1	247:4	<b>default</b>	244:15	248:25
257:11	247:4	328:12	266:4	<b>describes</b>
257:25	247:25	<b>Defense</b>	267:24	256:11
263:8	248:19	243:2	268:14	<b>descriptio</b>
263:9	249:8	<b>defer</b>	270:9	n 340:21
264:11	249:9	322:14	271:5	<b>deserves</b>
285:7	250:18	<b>defined</b>	273:7	339:14
	251:1	243:16	273:23	
	264:3			
	270:14			

<b>design</b>	313:23	301:16	<b>directly</b>	<b>discussed</b>
249:2	<b>determinin</b>	302:11	315:2	287:4
255:3	<b>g</b>	322:11	<b>director</b>	<b>discussing</b>
324:20	267:1	333:12	235:11	249:21
<b>designed</b>	308:15	<b>differentl</b>	<b>dirt</b>	250:20
241:5	<b>develop</b>	<b>y</b> 279:7	271:23	254:1
246:7	248:2	<b>difficult</b>	272:14	<b>discussion</b>
254:24	334:1	268:4	272:16	232:9
261:8	<b>developed</b>	282:3	274:14	284:21
281:16	247:16	323:13	344:18	292:14
<b>desire</b>	248:23	338:6	345:1	299:20
337:25	<b>diagrams</b>	<b>dig</b>	<b>dirty</b>	<b>dispersed</b>
<b>detail</b>	294:5	234:3	253:11	278:14
237:21	<b>dialogue</b>	234:6	<b>disagree</b>	<b>displaceme</b>
<b>detect</b>	346:22	234:7	267:23	<b>nt</b> 309:7
307:11	<b>diapers</b>	244:7	<b>disassembl</b>	<b>disposal</b>
<b>detector</b>	334:18	256:16	<b>e</b> 302:25	242:24
293:13	<b>die</b> 344:24	266:19	<b>disaster</b>	243:5
<b>determinat</b>	<b>difference</b>	272:25	347:14	244:10
<b>e</b> 280:8	259:8	275:22	<b>disburse</b>	258:5
<b>determine</b>	341:23	276:10	279:10	258:14
244:1	<b>different</b>	279:13	279:10	282:6
247:19	230:21	308:23	<b>disbursed</b>	282:19
249:1	231:14	315:13	278:15	282:20
254:22	234:11	331:15	<b>discharge</b>	284:22
293:5	241:2	335:22	344:12	285:1
293:14	246:3	344:12	<b>discharged</b>	285:10
296:8	248:3	344:19	253:9	285:17
315:10	250:15	345:3	253:12	285:18
315:11	251:1	<b>digging</b>	<b>disclosed</b>	285:19
315:21	255:6	266:20	271:4	285:24
316:2	255:11	305:11	<b>discretion</b>	285:25
319:16	259:10	310:21	<b>al</b>	286:2
325:6	259:10	336:21	270:11	286:4
<b>determined</b>	267:22	337:2	270:17	286:9
263:22	270:3	337:6	<b>discuss</b>	286:16
281:6	278:18	345:13	302:11	286:19
281:12	283:20	<b>direct</b>		286:22
	285:1	264:3		299:7
				336:18

340:3	<b>distinguish</b>	244:23	312:14	292:11
340:4	<b>h</b> 277:6	271:11	312:16	293:25
<b>disposals</b>	<b>distribute</b>	286:19	339:13	294:9
314:17	<b>d</b> 343:5	287:5	<b>done</b>	294:12
<b>dispose</b>	<b>ditch</b>	299:23	246:24	294:21
256:19	291:23	308:12	249:5	296:5
258:2	<b>ditches</b>	314:19	263:7	297:23
258:18	234:3	321:24	272:5	298:13
258:24	252:9	327:22	274:17	300:19
259:18	252:12	328:9	298:22	304:5
260:25	252:16	328:13	307:19	304:13
261:24	252:16	328:18	314:25	305:13
262:11	255:1	333:24	315:10	308:12
280:4	255:2	335:19	326:12	308:25
282:5	255:4	335:22	<b>do-over</b>	309:3
282:24	<b>divided</b>	336:3	330:10	311:18
282:24	250:1	336:8	<b>Dowell</b>	313:4
285:13	251:24	336:14	234:23	313:19
313:12	<b>division</b>	336:20	234:25	315:23
315:15	239:5	336:22	245:2	316:13
335:15	<b>DNF</b> 244:9	336:24	245:5	316:25
337:9	<b>document</b>	337:1	254:8	317:15
<b>disposed</b>	238:12	337:4	261:19	318:5
251:16	294:15	337:5	278:2	319:13
252:13	295:25	340:5	278:25	319:22
282:18	320:17	340:13	279:22	<b>downstream</b>
298:20	<b>documents</b>	345:15	280:16	339:23
299:8	265:3	345:17	282:22	<b>dozens</b>
314:13	266:14	<b>DOE's</b>	283:3	270:25
314:22	343:2	335:15	284:3	272:6
315:5	343:10	336:4	284:15	<b>draft</b>
315:17	343:17	336:10	287:14	233:15
<b>disposing</b>	343:21	336:16	288:3	281:17
337:12	343:22	337:13	289:21	<b>drain</b>
<b>dispositio</b>	343:23	<b>dogs</b>	289:25	262:18
<b>n</b> 298:24	<b>do-dos</b>	325:10	290:2	278:11
316:14	341:1	325:12	290:9	<b>dramatic</b>
<b>distance</b>	<b>DOE</b> 233:12	<b>dollars</b>	290:13	265:5
265:6	235:9	246:25	291:8	<b>dramatical</b>
		303:4	291:17	

<b>ly</b> 307:6	274:5	289:23	269:5	280:15
<b>drew</b> 285:4	278:4	332:5	270:17	283:5
<b>drill</b>	309:12	332:5	289:11	342:5
242:17	<b>dumped</b>	346:19	312:3	344:1
302:14	280:22	<b>earthquake</b>	<b>effectiven</b>	<b>E-mail</b>
302:15	291:25	<b>s</b> 290:23	<b>ess</b>	231:18
302:25	<b>dumping</b>	<b>easier</b>	246:4	<b>E-mails</b>
<b>drilled</b>	273:7	296:17	246:6	276:21
333:22	307:4	<b>east</b> 250:4	249:8	342:8
<b>drink</b>	341:20	253:22	257:22	<b>Emmy</b>
241:23	344:5	321:19	289:10	235:25
<b>drinking</b>	<b>durable</b>	337:4	311:23	247:8
241:22	246:5	<b>easy</b>	<b>efficientl</b>	249:14
241:22	<b>during</b>	294:24	<b>y</b> 279:11	249:18
242:4	232:9	312:13	<b>effort</b>	255:5
<b>drive</b>	<b>DVD</b>	323:6	269:9	260:10
247:3	238:8	333:10	307:20	263:12
247:10	238:21	<b>echo</b>	<b>either</b>	264:13
312:6	302:9	234:25	258:5	308:8
<b>drivers</b>	<b>dynamic</b>	<b>Ecology</b>	282:25	<b>employed</b>
256:8	287:12	239:16	<b>electric</b>	328:18
<b>drives</b>	336:7	242:23	257:18	<b>employees</b>
257:17	<hr/>	<b>economical</b>	<b>electricit</b>	341:14
259:1	<b>E</b>	<b>ly</b> 324:9	<b>y</b> 341:6	<b>empty</b>
<b>driving</b>	<b>earlier</b>	<b>economy</b>	<b>electrodes</b>	234:8
257:5	254:25	246:17	257:15	342:10
261:14	287:5	<b>edge</b>	257:18	<b>encapsulat</b>
<b>dropped</b>	287:21	274:15	<b>element</b>	<b>ed</b>
307:5	309:4	<b>educationa</b>	331:5	292:18
<b>drove</b>	<b>early</b>	<b>l</b> 287:5	<b>elements</b>	<b>encourage</b>
305:23	259:5	<b>effect</b>	268:21	238:12
<b>dug</b> 274:13	264:18	264:3	312:6	264:4
275:25	307:2	307:17	323:5	<b>encouraged</b>
276:3	307:2	<b>effective</b>	<b>elevated</b>	337:24
<b>dump</b>	<b>earth</b>	259:21	298:21	<b>encouragin</b>
273:10	334:13	260:3	<b>else</b> 250:9	<b>g</b> 230:10
273:15	<b>earthquake</b>	260:5	279:17	230:13
	287:11			<b>endorse</b>

302:4	244:9	298:19	314:24	254:6
<b>energy</b>	244:13	298:25	<b>ERDITH</b>	<b>evaluating</b>
230:18	255:4	306:13	244:10	332:6
230:22	256:25	310:4	244:10	<b>evaporate</b>
231:22	258:13	311:2	258:5	261:10
233:5	259:15	311:3	316:20	<b>evapotrans</b>
234:21	261:8	312:19	<b>erosion</b>	<b>piration</b>
235:3	269:6	347:11	331:21	261:7
236:15	278:11	<b>environmen</b>	<b>especially</b>	261:25
238:10	279:7	<b>tal</b>	249:7	269:7
240:14	<b>engineerin</b>	231:24	334:6	<b>evening</b>
243:1	<b>g</b>	233:8	<b>essential</b>	230:7
244:15	249:3	249:18	297:6	230:8
264:1	324:20	267:24	<b>essentiall</b>	249:17
266:4	<b>enhance</b>	299:4	<b>y</b>	341:18
267:24	259:10	307:15	269:9	<b>event</b>
268:14	259:12	314:4	305:7	329:22
270:9	262:4	314:18	<b>establish</b>	<b>eventually</b>
271:5	<b>enjoy</b>	314:19	343:16	240:23
273:6	236:23	315:7	<b>establishe</b>	344:9
273:7	<b>enormous</b>	<b>EPA</b>	<b>d</b> 242:25	<b>everybody</b>
273:23	272:22	236:2	243:3	232:21
274:23	<b>ensure</b>	263:13	<b>establishi</b>	232:22
275:11	317:16	263:17	<b>ng</b> 243:5	235:18
281:21	<b>entire</b>	273:22	<b>estimate</b>	300:1
284:25	300:22	275:19	272:3	321:15
307:22	<b>environmen</b>	286:8	272:4	330:16
313:11	<b>t</b> 240:18	299:23	<b>estimated</b>	<b>everyone</b>
317:15	241:16	308:4	268:16	235:1
337:17	243:20	321:24	<b>evaluate</b>	249:17
338:19	245:11	336:3	248:5	274:17
341:19	246:10	<b>EPA's</b>	296:5	281:22
344:4	247:5	343:13	315:9	338:1
344:10	254:3	<b>equaling</b>	315:20	341:17
344:14	263:20	282:15	317:22	342:5
<b>engineer</b>	263:23	<b>equipment</b>	330:2	<b>everything</b>
246:12	268:2	307:9	<b>evaluated</b>	347:12
261:12	284:7	307:10		347:13
326:6	287:9	<b>equivalent</b>		
<b>engineered</b>				

347:13	292:10	341:1	<b>Facebook</b>	294:13
<b>exact</b>	305:25	<b>exposed</b>	276:22	296:20
348:1	<b>existed</b>	344:23	342:9	299:3
<b>exactly</b>	255:17	<b>exposure</b>	<b>facilitato</b>	299:4
243:11	293:15	335:18	<b>r</b> 231:3	308:4
244:2	<b>existing</b>	<b>extend</b>	<b>facilities</b>	320:10
257:9	256:14	296:1	251:14	<b>Falk's</b>
333:20	259:11	<b>extending</b>	<b>facility</b>	343:13
<b>example</b>	262:5	296:22	244:11	<b>falls</b>
266:7	279:15	<b>extension</b>	317:16	321:19
297:23	282:14	343:15	<b>fact</b> 268:7	337:14
305:17	<b>exists</b>	<b>extensivel</b>	276:6	<b>false</b>
309:7	242:2	<b>y</b> 303:9	276:7	336:5
<b>examples</b>	<b>expect</b>	<b>extent</b>	281:18	<b>familiar</b>
278:7	263:8	257:17	341:24	290:14
<b>excavate</b>	<b>expecting</b>	287:18	343:5	329:19
260:18	320:19	288:21	<b>factor</b>	<b>fancy</b>
260:20	<b>expensive</b>	291:9	311:24	257:14
260:21	238:7	311:11	311:25	<b>farmed</b>
274:19	270:23	318:7	<b>factors</b>	344:24
322:18	275:3	<b>extract</b>	312:2	<b>farmer</b>
<b>excavated</b>	330:20	284:5	<b>facts</b>	278:9
261:3	336:21	<b>extracted</b>	276:20	<b>farming</b>
261:6	339:20	292:20	<b>failures</b>	243:22
<b>excavating</b>	340:18	<b>extracting</b>	340:10	344:20
266:11	340:18	259:22	<b>fair</b>	<b>farms</b>
<b>excavation</b>	<b>experience</b>	292:22	296:11	280:23
308:22	340:25	<b>extraction</b>	<b>fairly</b>	<b>farther</b>
<b>excellent</b>	<b>expert</b>	259:21	237:13	340:21
332:7	295:18	260:17	254:13	<b>fascinating</b>
<b>except</b>	<b>expertise</b>	272:11	256:6	<b>g</b> 255:7
276:15	333:5	309:14	262:1	<b>fat</b> 341:2
315:8	340:24	309:14	323:6	<b>father's</b>
331:9	<b>explain</b>	<b>extremely</b>	<b>Falk</b>	332:11
<b>exhume</b>	231:20	336:1	278:21	<b>feasibilit</b>
315:3	233:24	<hr/>	286:8	<b>y</b>
<b>exist</b>	300:19	<hr/>	286:8	
	309:6	<hr/>	290:1	
		<hr/>		
		F		
		<hr/>		

248:1	266:15	323:19	330:25	261:5
296:7	266:21	325:16	335:7	279:24
301:19	266:21	330:21	339:11	<b>filled</b>
301:22	266:21	331:7	345:6	297:9
343:11	266:21	331:15	345:15	<b>final</b>
<b>federal</b>	266:23	331:19	345:23	239:8
235:11	268:16	331:21	346:2	244:1
240:24	270:24	336:17	346:6	256:1
301:14	270:25	336:21	346:9	<b>Finally</b>
329:11	271:1	337:2	346:13	325:2
330:7	271:23	344:18	346:17	<b>fine</b>
345:17	272:21	344:19	346:24	264:20
<b>feed</b>	272:24	345:1	347:6	284:21
325:10	272:25	345:19	347:18	318:16
<b>feedback</b>	274:14	<b>felt</b>	<b>fence</b>	320:21
264:2	274:19	279:24	243:25	347:3
264:10	274:20	293:20	256:17	<b>finish</b>
<b>feel</b>	276:10	326:21	<b>fertilizer</b>	235:25
293:18	287:20	<b>FEMALE</b>	<b>s</b> 266:6	239:7
309:4	292:18	277:21	<b>fiction</b>	240:16
326:21	298:3	279:20	329:1	<b>finishing</b>
334:6	302:24	280:11	<b>field</b>	239:4
<b>feels</b>	302:25	287:2	255:14	255:24
319:6	304:9	289:23	257:19	256:1
<b>feet</b>	304:11	290:5	261:11	<b>fire</b> 330:4
252:17	304:14	290:11	278:12	<b>firm</b> 272:3
252:18	304:24	291:6	278:14	<b>first</b>
252:24	308:22	291:10	309:9	234:20
253:23	308:22	294:11	309:10	240:4
254:17	308:24	299:24	309:10	242:25
256:7	309:13	300:3	309:10	250:18
257:16	309:13	300:9	<b>fields</b>	251:21
258:3	309:13	300:21	239:24	252:8
260:12	309:14	313:9	254:21	254:11
260:20	309:16	313:20	256:6	254:14
260:21	309:17	316:23	<b>figure</b>	258:9
260:23	309:18	317:1	343:12	264:19
262:6	309:24	318:3	<b>fill</b> 261:2	267:13
266:11	312:11	319:9	261:3	
	312:15	325:17	261:4	
	316:18	330:14		

268:23	<b>floor</b>	243:13	265:21	<b>friends</b>
268:24	341:16	244:19	<b>Fort</b>	276:22
279:1	<b>flush</b>	297:25	326:15	<b>fully</b>
282:23	253:10	<b>force</b>	<b>forward</b>	302:3
287:16	<b>fly</b> 329:24	257:5	342:25	<b>functionar</b>
295:24	<b>focal</b>	261:16	<b>forwarding</b>	<b>y</b> 333:15
297:15	292:13	305:23	342:8	333:17
298:22	<b>focus</b>	<b>foregoing</b>	<b>fossils</b>	<b>fundamenta</b>
304:8	259:4	348:9	270:1	<b>lly</b>
313:6	329:14	<b>forever</b>	<b>four-and-</b>	270:6
322:25	337:8	273:7	<b>a-half-</b>	<b>funding</b>
329:10	<b>focusing</b>	304:24	<b>year</b>	269:9
332:20	239:22	328:17	265:1	<b>funny</b>
339:9	<b>folks</b>	346:20	<b>four-</b>	245:7
343:16	230:15	<b>forgot</b>	<b>foot</b>	<b>furrow</b>
<b>Fish</b>	267:4	324:21	302:19	278:10
240:25	267:18	<b>form</b> 233:9	<b>FPD</b> 235:11	<b>furrowed</b>
<b>fits</b>	285:8	259:24	<b>frame</b>	278:8
231:12	297:1	260:4	269:8	<b>fused</b>
<b>five</b>	318:12	288:5	<b>framed</b>	260:11
234:15	320:22	288:7	319:5	<b>future</b>
246:3	326:25	288:13	<b>framework</b>	249:9
258:10	327:16	311:9	238:16	273:17
258:15	327:17	312:20	238:19	282:15
266:21	333:7	315:18	<b>Frank</b>	299:20
302:6	334:24	320:10	345:6	314:17
337:8	338:24	331:6	<b>frankly</b>	314:20
<b>flawed</b>	<b>follow-</b>	<b>formal</b>	343:4	314:21
268:22	<b>up</b>	232:13	<b>free</b>	332:16
<b>flood</b>	304:20	296:21	310:15	332:18
290:4	<b>foot</b>	296:22	<b>French</b>	332:23
326:14	304:16	318:14	255:5	332:25
<b>floods</b>	<b>footprint</b>	318:18	262:18	338:21
269:19	239:6	320:13	278:11	339:13
326:14	239:14	321:11	<b>friendly</b>	340:4
326:16	241:6	<b>formally</b>	331:5	340:13
326:18	241:11	267:20	<b>future-</b>	<b>looking</b>
345:9	243:12	<b>forms</b>		
345:11				

314:16	308:19	343:25	320:7	319:22
<u>          </u>	<b>geographic</b>	<b>gets</b> 261:5	340:13	348:2
<u>        </u>	<b>al</b>	279:2	<b>glad</b>	<b>grand</b>
<b>gallons</b>	291:14	290:13	331:25	332:13
280:24	<b>geologic</b>	290:15	<b>glass</b>	<b>graph</b>
<b>game</b>	269:2	308:16	257:14	279:18
278:17	269:24	309:25	280:14	287:24
<b>GaMo</b>	286:16	312:9	283:11	289:17
293:10	313:14	316:20	<b>goal</b> 242:3	309:3
<b>gap</b> 270:23	315:19	319:17	325:24	309:6
<b>garbage</b>	335:24	340:17	337:14	<b>graphic</b>
343:4	<b>geological</b>	<b>getting</b>	<b>goals</b>	251:12
<b>gas</b> 272:15	314:24	261:14	241:20	252:21
<b>gasoline</b>	315:13	280:10	<b>gone</b> 269:4	<b>graphically</b>
321:18	318:3	289:12	300:15	<b>y</b> 305:21
<b>general</b>	<b>geology</b>	291:8	339:19	<b>graphs</b>
244:4	269:1	296:16	340:12	304:6
253:15	288:10	307:17	344:8	<b>gravel</b>
258:10	336:7	308:2	<b>gorge</b>	253:12
284:9	<b>geometry</b>	311:16	230:15	278:14
299:6	258:18	341:2	<b>gorgeous</b>	279:9
<b>generally</b>	278:19	345:13	230:7	<b>great</b>
285:2	<b>Gerry</b>	<b>gift</b> 332:1	<b>government</b>	272:11
314:19	236:4	<b>gigantic</b>	238:10	285:5
<b>generated</b>	267:8	330:6	240:24	289:18
251:15	268:12	<b>gist</b> 284:9	268:11	292:4
<b>generation</b>	270:5	<b>given</b>	328:6	307:11
270:14	271:14	271:8	328:12	318:8
332:23	271:17	336:1	333:16	321:17
333:1	275:8	336:6	340:14	325:1
<b>generation</b>	279:4	338:10	340:15	326:15
<b>s</b> 328:16	280:2	340:10	<b>grab</b>	327:11
332:16	292:17	<b>gives</b>	235:21	334:6
332:17	294:21	258:10	<b>grade</b>	348:5
332:25	296:10	279:25	256:3	<b>greater</b>
<b>gentleman</b>	296:20	311:20	<b>gram</b>	275:16
277:22	310:9	334:13	275:13	<b>green</b>
	313:19	<b>giving</b>	319:21	239:2
	341:15	230:8		

<b>gross</b>	318:1	264:6	<b>guess</b>	267:14
238:22	319:14	265:23	284:9	<b>hands</b>
344:15	327:9	289:4	289:7	267:17
<b>ground</b>	331:12	292:13	305:12	277:9
252:17	<b>grounds</b>	315:23	311:17	287:1
255:4	258:25	322:11	327:20	320:18
256:23	299:10	<b>grouped</b>	<b>guides</b>	321:10
257:3	299:13	251:18	300:25	334:24
257:16	<b>groundwater</b>	258:16	<b>guys</b> 289:2	<b>Hanford</b>
259:23	<b>r</b> 235:12	258:21	318:13	230:19
260:11	242:8	<b>groupings</b>	318:21	231:11
260:12	250:24	233:23	328:20	233:6
260:24	251:5	234:1	341:11	233:10
261:14	251:6	<b>groups</b>	<hr/>	234:2
262:6	257:9	234:10	H	234:23
262:14	276:12	251:24	<b>Hafiz</b>	236:9
268:1	301:1	252:6	327:18	236:12
268:6	303:8	262:9	334:8	237:7
268:15	303:25	264:20	<b>half</b> 268:3	238:6
268:20	305:8	268:11	269:2	238:15
270:18	309:21	268:12	269:3	238:18
271:6	336:13	301:15	275:15	238:22
273:25	<b>group</b>	<b>grout</b>	299:8	239:3
274:4	230:15	262:12	299:9	239:8
278:9	234:5	284:4	306:9	242:22
278:15	234:14	<b>grouting</b>	326:5	243:6
279:9	235:14	284:1	328:2	250:17
279:10	235:20	<b>grown</b>	329:23	250:24
280:5	251:22	307:10	336:1	251:13
280:22	252:3	<b>guarantee</b>	<b>halves</b>	258:23
281:24	252:10	266:5	250:2	265:17
283:14	252:20	<b>guaranteed</b>	<b>hand</b> 254:5	265:21
283:21	253:20	324:14	339:15	268:10
288:10	253:21	<b>guard</b>	<b>handled</b>	271:8
293:4	260:8	328:15	297:20	275:6
298:17	260:9	328:17	<b>handout</b>	282:17
302:20	260:10	<b>guarding</b>	254:12	284:25
302:22	261:21	328:3	254:13	285:8
311:6	262:1			285:16
312:1	262:4			285:22
316:1				286:3

286:18	339:11	311:3	271:17	260:18
286:21	<b>hardly</b>	312:19	335:12	<b>high-level</b>
290:15	334:5	<b>hear</b> 235:3	342:4	284:12
290:17	<b>haven't</b>	263:7	<b>Heartsun</b>	285:16
298:6	236:16	267:6	327:18	286:20
298:18	264:17	277:11	<b>heck</b>	313:12
299:1	274:11	282:5	273:21	<b>highlighte</b>
301:12	281:12	296:10	<b>Helens</b>	<b>d</b> 338:17
307:3	318:15	300:2	329:22	<b>highly</b>
307:4	318:17	<b>heard</b>	<b>hell</b>	252:22
307:18	339:8	270:9	325:13	259:21
307:25	<b>having</b>	271:22	332:17	260:3
308:10	326:14	272:10	<b>Hello</b>	285:2
317:9	344:11	273:20	330:14	336:7
322:10	<b>haystack</b>	282:16	<b>help</b> 231:6	<b>highly-</b>
325:14	314:15	308:20	238:21	<b>contamin</b>
326:17	<b>hazard</b>	326:10	267:1	<b>ated</b>
331:20	317:18	326:19	267:19	239:10
332:11	<b>head</b>	327:4	309:1	<b>highly-</b>
337:11	230:18	327:21	<b>helped</b>	<b>radioact</b>
337:14	295:2	329:13	342:7	<b>ive</b>
338:1	<b>headed</b>	334:2	<b>helpful</b>	337:3
340:7	276:12	334:4	264:12	340:6
342:2	<b>health</b>	345:23	<b>Hess</b>	<b>highs</b>
347:25	240:18	345:24	321:12	323:11
<b>Hanford's</b>	241:16	<b>hearing</b>	<b>Hi</b> 287:2	<b>high-</b>
340:10	243:20	251:21	<b>hide</b> 295:6	<b>salt</b>
<b>happen</b>	245:10	253:2	<b>high</b>	252:20
338:4	246:10	263:24	252:25	260:8
338:15	247:5	264:5	258:17	260:9
<b>happened</b>	254:3	282:12	281:5	263:25
253:15	263:20	285:3	309:9	264:22
301:5	263:23	320:16	<b>higher</b>	265:22
<b>hard</b>	306:13	347:7	259:13	266:10
342:16	306:25	<b>Heart</b>	334:3	270:19
<b>harder</b>	307:6	232:4	<b>highest</b>	287:18
271:12	307:14	<b>Hearts</b>	297:24	292:12
<b>Harding</b>	310:3	267:8	303:25	297:24
332:9	311:2	268:12		

305:18	<b>holistic</b>	236:21	<b>hydrogeolo</b>	317:9
<b>high-</b>	245:21	<b>huge</b>	<b>gists</b>	317:22
<b>tech</b>	<b>home</b>	236:19	295:19	332:22
302:18	247:10	269:20	<hr/>	346:15
<b>hiking</b>	<b>Hood</b>	300:10	I	<b>impacts</b>
329:20	230:14	307:4	<b>idea</b>	320:5
<b>hinted</b>	230:24	313:23	253:15	<b>impermeabl</b>
250:22	287:12	<b>human</b>	268:25	<b>e</b> 261:12
<b>historic</b>	290:20	240:17	269:16	<b>implement</b>
292:1	291:15	241:16	270:6	246:10
292:5	321:13	243:20	273:12	312:1
299:9	321:24	245:10	280:1	<b>implore</b>
299:17	325:18	246:10	293:2	345:15
<b>historical</b>	327:19	247:5	298:3	<b>important</b>
328:7	331:1	254:3	332:7	233:20
<b>history</b>	332:10	263:20	340:7	233:22
247:15	335:8	263:23	340:16	233:22
269:24	339:11	306:13	<b>Ideally</b>	233:22
332:14	345:7	310:3	252:4	240:13
<b>hit</b> 305:4	347:7	311:2	<b>identified</b>	240:20
<b>hits</b>	347:19	311:3	254:4	242:7
283:15	<b>hope</b>	312:18	335:21	243:21
304:9	236:22	313:24	<b>ignore</b>	247:9
309:19	254:12	314:4	276:6	249:12
<b>hold</b>	266:25	334:12	<b>III</b> 230:1	271:20
257:20	322:6	<b>humans</b>	<b>illegal</b>	271:24
262:13	329:25	332:16	273:9	313:1
280:23	330:6	<b>hundred</b>	<b>imaginable</b>	334:11
283:12	342:23	274:19	338:14	342:19
<b>hole</b> 274:9	<b>hopefully</b>	274:20	<b>imagine</b>	342:21
293:9	231:11	300:16	270:2	<b>improve</b>
<b>holes</b>	232:6	327:6	302:23	291:19
293:3	234:18	347:1	313:24	<b>inaccurate</b>
293:3	236:5	<b>hundreds</b>	<b>immobile</b>	317:5
293:7	237:10	244:24	304:23	<b>inadverten</b>
293:8	<b>horizontal</b>	286:12	306:3	<b>t</b> 291:23
302:13	<b>ly</b>	299:14	336:6	<b>inaugural</b>
	329:25	299:14	<b>impact</b>	332:21
	<b>house</b>	327:23		<b>include</b>

289:24	344:23	244:16	276:10	<b>interns</b>
290:2	<b>informatio</b>	245:13	331:14	295:18
290:3	<b>n</b> 231:16	249:7	337:4	<b>interrupti</b>
290:7	231:18	249:25	344:9	<b>on</b>
317:8	236:7	250:1	344:19	230:12
<b>included</b>	247:24	250:3	344:23	234:24
308:11	249:22	250:8	348:2	288:2
317:3	267:15	250:14	<b>institute</b>	<b>intervals</b>
<b>includes</b>	267:19	<b>input</b>	246:12	282:10
239:15	271:4	235:3	<b>institutio</b>	<b>interviews</b>
268:10	289:6	237:23	<b>nal</b>	247:14
301:13	293:19	237:24	256:15	<b>introduce</b>
<b>incorrect</b>	294:3	238:5	<b>insults</b>	258:24
346:2	295:5	248:7	329:4	302:16
<b>increase</b>	295:14	248:7	<b>insurance</b>	<b>invest</b>
300:10	296:6	248:8	325:12	312:23
<b>increased</b>	296:12	248:9	<b>intelligen</b>	317:21
300:14	301:18	264:2	<b>ce</b> 329:5	<b>investigat</b>
<b>indefinite</b>	302:5	271:8	<b>interest</b>	<b>ion</b>
324:14	302:7	<b>insane</b>	230:24	247:17
<b>independen</b>	303:10	340:24	253:1	247:24
<b>t</b> 289:4	305:20	<b>insanely</b>	268:8	273:21
<b>indetermin</b>	308:9	340:18	301:15	273:22
<b>ate</b>	317:12	<b>inside</b>	<b>interested</b>	296:7
279:16	341:11	244:1	253:2	302:5
<b>indicate</b>	<b>inhuman</b>	<b>insist</b>	263:24	<b>involved</b>
305:20	340:22	275:25	264:5	265:2
<b>indicating</b>	<b>injection</b>	<b>in-situ</b>	308:7	282:10
309:15	262:18	257:13	321:16	301:19
<b>industrial</b>	<b>inner</b>	259:16	<b>interestin</b>	337:2
241:2	240:12	<b>inspection</b>	<b>g</b> 234:10	342:2
241:3	240:13	247:14	<b>interests</b>	<b>involvement</b>
250:16	241:10	<b>instabilit</b>	322:12	<b>t</b> 342:15
250:19	242:11	<b>y</b> 291:7	<b>interim</b>	342:22
310:15	242:14	<b>instance</b>	283:9	<b>involves</b>
326:3	242:16	256:12	<b>Internal</b>	338:21
344:20	242:18	258:16	335:18	<b>irony</b>
	242:20	<b>instead</b>		
	243:21			

276:7	235:16	<b>judges</b>	322:15	320:12
<b>irresponsi</b>	<b>JD</b>	330:8	<b>key</b> 268:21	<b>land</b>
<b>ble</b>	234:12	<b>July</b> 230:3	<b>kids</b>	240:21
340:22	234:23	<b>jumped</b>	332:13	240:22
<b>irrigation</b>	234:23	279:20	332:13	<b>landfill</b>
243:23	250:14	<b>jumps</b>	334:18	276:5
<b>isn't</b>	250:22	312:15	<b>kilograms</b>	286:7
243:13	254:5	<b>junk</b>	272:1	315:6
266:14	261:17	239:11	299:15	<b>landfills</b>
293:24	263:11	<b>Jurgen</b>	<b>kinds</b>	315:6
307:24	266:3	321:12	270:1	<b>Lands</b>
308:21	278:22	<b>justify</b>	284:21	239:16
315:12	295:15	271:6	<b>kite</b>	<b>large</b>
324:17	309:1	<hr/>	305:10	234:11
<b>isolation</b>	316:24	<b>K</b>	<b>knew</b>	236:18
258:7	319:9	<b>KA</b> 304:9	255:20	239:18
283:1	333:8	309:19	343:8	251:15
286:11	<b>Jefferson</b>	<b>Karen</b>	<b>knowledge</b>	267:25
335:25	332:20	339:11	291:9	268:5
<b>issue</b>	<b>jeopardy</b>	<b>Kathy</b>	348:2	270:15
269:14	326:16	325:17	<b>known</b>	270:18
271:8	<b>job</b> 236:10	<b>Keeper</b>	255:2	274:16
282:11	257:7	232:4	279:18	275:4
<b>issues</b>	340:20	267:7	331:4	280:3
267:23	340:21	267:21	<hr/>	281:3
<b>it's</b> 245:1	<b>jobs</b> 325:2	342:4	<b>L</b>	287:13
251:3	<b>Jody</b> 345:6	<b>Keeper's</b>	<b>Lab</b> 275:15	298:17
256:17	<b>Joe</b> 329:9	269:22	347:23	308:5
331:15	<b>Johnson</b>	<b>Keith</b>	<b>lack</b> 248:2	335:19
332:1	235:15	332:9	<b>lady</b>	<b>largest</b>
<b>I've</b>	277:14	334:22	326:11	251:3
235:14	<b>joined</b>	<b>Ken</b> 230:17	<b>Laija</b>	<b>last</b>
<hr/>	267:5	254:10	235:25	232:13
<b>J</b>	<b>joint</b>	258:11	249:17	236:16
<b>Jade</b> 347:6	232:4	271:1	249:18	238:2
<b>Japan</b>	307:20	302:2	263:15	238:2
332:2	<b>joke</b> 325:8	318:24	320:1	241:8
<b>Jaraysi</b>				246:5
				257:24

267:6	314:21	316:7	256:6	<b>lies</b>
272:23	315:2	324:4	261:19	330:22
274:8	315:4	336:22	263:1	<b>life</b> 268:3
284:11	315:7	347:22	323:5	269:2
295:4	315:14	<b>leave</b>	341:25	306:10
301:25	316:9	241:8	<b>let's</b>	326:5
303:21	316:14	266:2	250:8	326:8
306:15	344:5	268:16	251:10	334:13
307:2	344:11	276:16	303:21	<b>lifetime</b>
323:6	<b>Lawrence</b>	322:1	313:6	339:19
326:7	275:15	327:10	321:9	344:16
326:7	310:11	328:17	324:21	344:22
341:16	347:23	335:19	339:9	<b>light</b>
<b>lastly</b>	<b>laws</b>	<b>leaving</b>	343:24	240:11
237:22	314:18	267:25	<b>letter</b>	<b>limit</b>
246:13	314:19	268:5	264:18	264:21
248:21	315:8	268:20	267:1	<b>limitation</b>
259:3	315:20	270:18	331:9	<b>s</b> 332:1
259:20	<b>layer</b>	271:6	<b>level</b>	<b>limited</b>
262:15	287:4	280:4	237:10	281:14
325:8	304:9	318:17	246:23	303:17
<b>late</b> 267:3	304:10	319:1	275:16	<b>limits</b>
273:9	309:19	331:11	275:19	269:10
295:17	<b>leach</b>	336:3	281:5	<b>line</b> 291:3
313:16	304:9	336:17	285:8	331:25
<b>later</b>	309:19	<b>left-</b>	285:13	<b>lined</b>
249:13	324:15	<b>hand</b>	300:5	341:2
250:21	<b>lead</b>	250:3	305:23	<b>liner</b>
320:21	340:15	<b>legal</b>	307:11	279:9
342:21	<b>leafing</b>	249:10	314:24	<b>link</b> 295:1
<b>lateral</b>	290:21	310:3	334:3	295:2
324:18	<b>leap</b> 338:8	<b>legislator</b>	334:3	296:8
324:19	<b>least</b>	<b>s</b> 330:9	347:24	296:9
<b>law</b> 249:10	247:1	<b>length</b>	<b>levels</b>	343:7
256:11	260:19	269:11	254:2	<b>linked</b>
289:14	262:6	<b>less</b>	280:7	294:15
295:17	276:15	242:11	307:5	<b>liquid</b>
314:5	288:24	242:14	309:8	
314:14	297:2	246:23	310:10	
314:16			310:18	

251:16	253:4	<b>local</b>	273:18	231:10
252:10	259:5	267:6	292:19	231:16
252:13	259:10	285:13	296:3	231:17
258:13	260:10	301:14	306:12	239:11
273:8	265:8	<b>located</b>	328:9	239:23
273:10	279:7	249:24	336:1	253:1
274:5	279:15	250:10	337:10	264:1
298:7	280:17	250:24	<b>longer</b>	266:20
298:20	299:4	250:25	243:6	267:4
299:6	305:3	253:21	243:19	279:3
315:17	307:8	256:4	305:25	281:25
336:18	307:12	<b>locations</b>	307:4	283:6
341:20	309:1	315:1	314:22	289:18
344:5	312:9	<b>logical</b>	<b>long-lived</b>	290:23
344:6	318:24	294:24	335:24	290:23
<b>liquids</b>	321:8	<b>logically</b>	<b>long-</b>	291:21
302:16	329:21	305:1	<b>term</b>	297:14
<b>list</b> 259:8	331:2	<b>logs</b> 293:9	241:15	299:18
<b>listed</b>	340:20	293:9	244:12	301:7
252:6	341:8	293:11	246:4	305:9
<b>listen</b>	345:20	293:12	249:6	314:18
333:6	<b>live</b>	<b>long</b> 232:7	257:11	315:16
333:6	246:19	235:22	281:20	321:2
333:11	287:3	235:23	281:21	322:14
<b>listening</b>	287:11	240:17	282:25	323:15
238:1	327:19	241:4	301:2	323:21
334:6	330:25	241:14	311:23	324:25
<b>literally</b>	332:9	243:17	312:22	326:10
303:4	337:23	244:13	316:10	326:19
303:18	345:7	244:15	319:18	331:12
<b>little</b>	345:10	244:22	327:5	331:25
230:21	347:6	244:23	335:16	332:15
231:1	<b>Livermore</b>	245:9	340:10	333:7
231:22	275:15	246:25	<b>lopped</b>	334:10
232:8	310:11	254:16	292:5	342:23
236:23	347:23	266:3	<b>lost</b>	347:8
250:7	<b>lives</b>	268:2	329:22	<b>love</b>
252:8	269:3	270:14	<b>lot</b> 230:20	305:10
252:21	328:16	273:9		328:25
	336:1			<b>lovely</b>

334:17	264:7	304:12	257:5	312:3
<b>low</b> 252:18	327:7	304:20	257:20	312:20
258:6	<b>maintained</b>	306:17	259:12	314:1
258:17	326:3	308:20	259:13	316:1
261:25	<b>maintainin</b>	313:3	260:21	316:5
288:6	<b>g</b> 256:14	314:12	261:1	316:9
322:8	<b>major</b>	316:11	261:15	316:17
323:21	299:12	318:24	261:16	316:18
<b>lower</b>	<b>majority</b>	319:20	262:1	319:14
306:19	286:10	321:12	262:10	<b>materials</b>
334:3	298:16	322:24	262:11	247:21
<b>low-risk</b>	298:24	325:16	262:17	284:6
322:8	314:13	327:18	269:12	307:16
<b>lows</b>	<b>MALE</b>	329:9	278:4	307:25
323:11	232:25	332:9	278:13	318:1
<b>low-salt</b>	233:3	337:22	279:10	<b>matter</b>
234:5	245:1	339:5	280:5	247:12
252:9	245:3	339:18	280:8	281:18
261:21	282:4	<b>manage</b>	280:9	291:11
336:24	283:2	244:20	281:2	<b>matters</b>
<b>ludicrous</b>	284:12	<b>manager</b>	283:14	247:11
328:10	284:18	234:21	283:19	248:13
	284:22	249:19	283:21	<b>maximum</b>
	285:9	<b>manner</b>	286:13	257:17
<hr/> M <hr/>	285:15	255:22	287:18	<b>may</b> 323:20
<b>ma'am</b>	285:24	337:13	287:19	328:12
335:6	286:6	<b>map</b> 254:16	287:23	329:20
<b>magnitude</b>	286:15	<b>mass</b> 298:6	288:11	<b>maybe</b>
236:11	286:17	<b>massive</b>	288:14	275:4
<b>mail</b>	293:24	236:18	288:20	299:3
276:20	294:1	273:1	292:21	300:18
<b>mailing</b>	297:3	<b>material</b>	292:22	305:2
342:5	298:7	234:16	293:13	306:24
<b>mailings</b>	298:11	237:13	296:6	306:24
342:20	298:14	241:13	298:1	320:23
<b>maintain</b>	299:21	244:9	310:8	325:16
259:10	300:1	247:23	310:23	339:16
262:4	300:6	256:2	310:25	<b>Mazola</b>
	301:10	257:3	311:6	269:19
	303:24		311:8	345:10
			312:1	

<b>McKenney</b>	<b>mechanical</b>	297:6	<b>Mexico</b>	239:15
235:14	283:18	<b>membrane</b>	258:7	239:22
<b>mean</b>	<b>mechanism</b>	261:13	275:1	240:10
280:16	317:20	<b>memory</b>	283:1	240:11
284:2	<b>mechanisms</b>	247:1	285:20	240:13
287:11	283:20	279:2	286:12	273:18
288:25	284:2	<b>mention</b>	286:15	279:5
289:15	<b>meet</b>	237:9	322:19	280:3
293:16	245:22	277:7	331:24	<b>milestones</b>
305:5	<b>meeting</b>	282:9	335:25	233:10
306:2	230:2	<b>mentioned</b>	<b>mic</b> 320:23	<b>million</b>
306:20	230:24	250:12	321:1	280:24
322:25	231:7	250:14	<b>micro</b>	312:14
327:7	232:10	264:19	290:23	312:15
328:10	232:15	266:4	<b>microphone</b>	<b>mind</b> 231:3
328:25	294:8	294:17	277:10	250:20
329:2	299:25	329:16	277:13	273:5
334:10	300:17	<b>mere</b> 328:2	277:17	314:15
341:10	325:5	<b>mess</b>	319:7	320:7
<b>meaning</b>	339:4	238:14	<b>mid</b> 230:14	320:20
251:20	341:9	284:8	<b>mid-70s</b>	333:13
<b>means</b>	<b>meetings</b>	284:9	313:13	334:11
240:16	230:20	297:7	313:22	<b>mine</b> 275:1
240:20	270:8	<b>meter</b>	314:3	<b>minimize</b>
245:15	280:12	339:20	<b>middle</b>	241:6
246:11	325:19	<b>method</b>	275:6	244:21
246:19	325:21	285:11	327:17	<b>miniscule</b>
259:11	333:3	285:18	345:10	272:15
259:21	341:22	285:19	<b>midnight</b>	<b>minute</b>
260:15	342:13	286:1	318:14	263:1
293:12	342:14	286:3	<b>Midwest</b>	263:16
317:23	342:16	286:19	326:15	277:16
<b>meantime</b>	<b>meets</b>	286:22	<b>migrated</b>	<b>minutes</b>
325:4	245:25	340:3	336:11	232:1
<b>measured</b>	<b>Melissa</b>	340:4	<b>mile</b>	232:20
307:7	287:2	<b>methods</b>	238:24	249:22
<b>measures</b>	<b>members</b>	280:7	<b>miles</b>	264:15
244:2		282:20	239:1	277:2
246:7				

<b>misc</b> 320:13	<b>mixing</b> 261:4	291:12 305:25 311:10 317:3 317:6 317:7	325:10 325:11	268:23 288:15 288:23 346:7 346:9 346:17 346:18 346:19
<b>miscellaneous</b> 258:21	<b>mobile</b> 268:25 276:9 288:8		<b>months</b> 285:4 296:16 297:4 297:11	
<b>misinterpreted</b> 323:20	<b>mobility</b> 246:9 288:13 289:6 289:7 290:10 291:4	<b>models</b> 291:15 317:25	<b>Monument</b> 239:3 239:9	<b>moved</b> 255:19 274:11
<b>misrepresentation</b> 303:16		<b>moderator</b> 264:15	<b>monuments</b> 239:15	<b>movement</b> 317:25 324:18 324:20 330:5
<b>miss</b> 320:15	<b>mobilized</b> 272:15 276:12	<b>monastery</b> 325:10	<b>moral</b> 270:12	
<b>missed</b> 331:10		<b>money</b> 231:5 245:7 246:20 246:21 300:12 300:12 312:23 328:14 330:21 338:19 345:12	<b>more-</b> <b>than-</b> <b>human</b> 347:10	<b>moves</b> 338:12
<b>missile</b> 239:12	<b>mobilizing</b> 273:4		<b>Moser</b> 330:15	<b>moving</b> 288:20 289:12 306:1 311:9
<b>missing</b> 235:18	<b>model</b> 288:17 289:3 289:24 290:6 290:9 291:3 291:15 291:19 309:20 311:11 317:24 317:24 329:17 331:14	<b>monitor</b> 241:14 241:15 243:17 244:14 319:15 324:14	<b>Moses</b> 235:16	<b>Mt</b> 287:11 291:14 329:22 339:11
<b>mistakes</b> 315:20		<b>monitoring</b> 307:1 307:15 324:12	<b>mostly</b> 269:3	<b>mud</b> 302:16
<b>misunderstanding</b> 303:17		<b>monitors</b> 317:25	<b>motive</b> 257:5 261:15 305:23	<b>Multnomah</b> 321:19
<b>mitigate</b> 238:14 262:21 312:24	<b>modeled</b> 317:14		<b>mountain</b> 239:17 239:18	<b>myself</b> 308:8
<b>mitigated</b> 260:6	<b>modeling</b> 288:21 289:1 291:12	<b>monks</b>	<b>move</b> 237:11 237:12 265:16 265:16 265:22 265:25	<hr/> <b>N</b> <hr/>
<b>mixed</b> 280:24				<b>nanocuries</b> 319:20 319:22

<b>nasty</b>	230:13	321:4	<b>none</b>	334:14
292:19	230:17	321:9	283:23	339:19
<b>national</b>	233:2	322:21	326:22	339:23
239:3	233:4	325:15	<b>normal</b>	340:16
239:8	261:17	327:15	254:18	340:23
273:15	263:11	330:11	280:6	341:3
285:14	264:13	330:24	<b>north</b>	<b>numerous</b>
317:17	275:8	334:22	238:25	250:10
<b>nation's</b>	276:25	335:4	239:16	<hr/>
251:3	277:15	337:21	<b>Northwest</b>	0
<b>Natural</b>	281:25	338:23	232:5	<b>Oak</b> 329:9
275:15	283:24	339:7	267:9	<b>Obama</b>
<b>naturally</b>	284:11	339:15	268:13	281:17
261:11	284:17	341:15	271:18	<b>obeyed</b>
<b>naval</b>	284:20	343:25	342:4	344:4
242:25	284:24	345:21	<b>note</b> 247:6	<b>obligation</b>
<b>neat</b>	285:12	345:25	<b>notes</b>	249:11
321:16	285:21	346:5	346:3	295:22
<b>necessary</b>	286:2	346:8	<b>nothing</b>	<b>observatio</b>
246:9	286:16	346:11	262:21	<b>nal</b>
258:4	286:25	346:15	307:12	266:18
261:1	289:20	346:21	326:12	<b>occurred</b>
305:20	291:21	347:3	327:2	291:24
308:23	296:25	347:16	<b>notice</b>	<b>occurring</b>
328:24	298:4	348:4	342:1	253:18
<b>news</b>	298:10	<b>nine</b>	342:13	<b>odd</b> 243:12
246:18	301:8	239:25	<b>nuclear</b>	<b>office</b>
<b>nice</b> 348:6	303:21	293:7	272:5	234:23
<b>nicely</b>	304:3	<b>no-</b>	272:6	274:16
333:20	306:14	<b>action</b>	273:13	<b>official</b>
<b>nickel</b>	306:23	328:21	273:14	233:14
341:10	308:17	<b>nobody</b>	274:1	<b>officials</b>
<b>night</b>	309:1	328:13	281:20	301:14
240:19	311:15	<b>nodding</b>	282:14	330:7
348:6	313:8	295:2	285:16	<b>oh</b>
<b>Niles</b>	314:10	<b>no-go</b>	286:21	324:21
230:6	316:21	341:3	327:11	326:11
	318:12	<b>nonaqueous</b>	332:3	
	319:2	288:6	333:4	
	319:25			
	320:18			

326:25	<b>opening</b>	<b>oppose</b>	<b>ons</b>	<b>overwhelmi</b>
<b>okay</b>	267:5	286:4	276:20	<b>ng</b>
245:13	<b>opens</b>	<b>opposing</b>	301:14	321:25
261:19	283:4	257:18	301:16	<b>owner</b>
284:18	300:4	<b>option</b>	<b>original</b>	233:5
286:17	<b>operable</b>	248:16	310:2	<hr/>
287:14	233:16	248:16	<b>others</b>	<hr/> P <hr/>
288:12	233:21	256:12	234:13	<b>p.m</b>
290:13	237:15	256:13	261:19	230:4
292:11	251:19	257:22	278:11	348:9
296:16	253:7	257:23	339:8	<b>pace</b>
301:8	<b>operate</b>	259:17	<b>other-</b>	333:17
301:22	260:17	312:11	<b>than-</b>	<b>package</b>
309:6	<b>operated</b>	341:4	<b>human</b>	247:20
319:25	247:17	<b>options</b>	347:9	<b>paddling</b>
325:9	<b>operating</b>	235:5	<b>otherwise</b>	269:25
330:17	243:7	237:3	231:18	<b>page</b> 325:2
335:4	<b>operationa</b>	281:19	342:10	<b>pages</b>
<b>old</b>	<b>l</b> 242:22	330:18	<b>ours</b> 241:3	323:4
253:9	331:13	<b>Oregon</b>	290:22	323:14
274:13	331:14	230:18	<b>outer</b>	<b>paper</b>
300:23	<b>operations</b>	232:2	240:10	262:25
325:9	243:6	248:8	242:10	<b>paradigm</b>
<b>ones</b> 250:5	258:23	301:13	<b>outreach</b>	238:1
250:12	273:3	302:3	235:16	310:1
305:16	<b>operative</b>	306:25	238:20	311:5
<b>ongoing</b>	265:18	307:6	<b>overall</b>	<b>particular</b>
308:9	<b>operator</b>	307:14	253:7	303:5
<b>online</b>	233:6	307:21	<b>overdriven</b>	303:6
267:20	<b>opinion</b>	307:22	246:15	<b>particular</b>
<b>on-site</b>	247:11	322:15	246:16	<b>ly</b>
286:18	<b>opportunit</b>	330:15	<b>oversights</b>	267:23
<b>onto</b>	<b>y</b> 306:16	345:15	230:19	322:3
313:22	318:17	<b>Oregon's</b>	264:16	<b>partners</b>
<b>open</b>	337:25	230:19	265:20	248:9
236:21	338:2	264:16	266:24	<b>pass</b> 307:3
255:1	338:13	<b>organizati</b>	<b>overview</b>	<b>passed</b>
276:19			258:10	

332:15	321:16	344:22	343:15	<b>photo</b>
<b>past</b>	325:3	344:24	343:18	254:20
246:21	327:21	345:3	<b>periodic</b>	<b>phrase</b>
288:22	330:12	346:24	323:5	251:21
291:8	333:6	347:2	<b>permanence</b>	<b>pick</b>
301:5	334:7	<b>percentage</b>	246:4	266:23
314:20	338:17	266:16	<b>personal</b>	<b>picocuries</b>
315:10	339:3	297:17	247:14	275:13
315:21	341:2	297:21	<b>personally</b>	348:2
315:21	342:15	298:5	262:23	<b>picture</b>
334:2	342:24	298:12	<b>personnel</b>	237:8
<b>path</b> 341:8	343:20	331:16	238:20	254:15
<b>Paula</b>	344:22	<b>perfect</b>	<b>perspectiv</b>	272:19
235:17	348:6	244:19	<b>e</b> 263:13	292:17
295:1	<b>people's</b>	288:13	264:16	340:23
300:19	232:19	<b>perforated</b>	264:24	341:12
<b>peel</b>	<b>per</b> 275:13	278:13	265:19	<b>piece</b>
287:14	319:20	<b>performed</b>	265:20	251:9
<b>penetrate</b>	319:22	317:8	266:25	343:4
262:2	333:1	<b>perhaps</b>	267:6	<b>pieces</b>
<b>penetratin</b>	348:2	324:5	269:22	231:11
<b>g</b> 257:4	<b>perceived</b>	324:23	311:20	<b>pile</b> 258:7
<b>people</b>	292:23	<b>period</b>	<b>pertinent</b>	<b>pilot</b>
232:18	<b>percent</b>	232:13	314:14	283:1
256:16	266:14	235:22	<b>PF</b> 255:25	286:11
271:9	268:16	236:21	<b>PH</b> 288:6	335:25
277:18	271:2	277:5	288:10	<b>pipe</b>
285:5	271:2	295:17	292:4	278:13
294:17	299:17	295:21	<b>Pharaohs</b>	<b>pipeline</b>
296:2	309:15	296:2	328:2	275:21
302:12	309:15	296:22	<b>phenomenon</b>	<b>pipelines</b>
318:16	309:18	318:19	317:18	234:6
318:25	321:20	320:11	333:14	<b>pipes</b>
320:1	321:25	320:13	<b>phone</b>	255:5
320:19	324:7	324:14	342:8	<b>pit</b> 274:17
320:25	331:7	328:2	<b>phonetic</b>	274:18
321:4	331:11	328:24	314:15	<b>pitch</b>
321:8	331:17	338:15		
321:10	336:22	343:2		
	339:12			

271:14	<b>plans</b>	306:4	259:1	288:3
<b>placards</b>	237:20	311:10	260:14	288:4
236:6	335:19	335:21	261:22	288:7
247:21	<b>plant</b>	<b>plates</b>	264:22	288:8
278:6	255:24	244:10	265:21	288:23
<b>places</b>	255:25	<b>please</b>	266:15	289:6
270:2	256:1	238:5	266:20	289:7
280:20	258:7	275:9	267:23	289:12
324:10	261:9	276:18	268:1	289:17
324:11	281:4	286:24	268:3	290:10
<b>plan</b>	283:1	291:17	268:14	291:5
231:14	283:11	295:13	268:17	298:16
232:16	286:11	319:12	268:20	298:18
232:16	287:25	339:17	268:23	298:25
232:21	328:5	345:13	268:25	299:7
233:16	335:17	<b>pleased</b>	269:15	299:8
234:14	<b>plants</b>	270:7	270:7	299:17
248:15	282:14	265:1	270:15	299:19
262:12	282:15	265:5	270:18	304:23
271:4	332:3	<b>plenty</b>	271:13	306:2
276:8	341:3	343:18	271:25	306:4
295:25	<b>plate</b>	<b>plume</b>	272:4	309:8
302:2	290:21	242:2	272:7	309:20
308:21	290:22	305:20	272:9	322:3
335:15	290:25	305:22	272:22	322:17
336:4	330:5	<b>plumes</b>	272:23	323:8
336:16	<b>plateau</b>	242:5	273:2	324:4
337:16	234:22	<b>plutonium</b>	273:4	326:4
340:12	240:7	234:2	273:24	327:8
342:3	240:9	234:4	274:2	330:19
342:3	241:18	234:12	274:25	331:5
342:22	241:24	240:1	275:3	331:7
342:25	242:5	250:6	275:6	331:11
343:4	242:9	251:14	275:13	335:16
344:14	269:18	252:11	275:17	335:16
<b>planet</b>	272:1	253:17	275:19	335:18
347:11	275:12	253:19	276:3	335:20
<b>planned</b>	288:22	255:24	276:7	335:23
282:18	291:7	256:1	276:9	336:2
	304:16	256:8	276:11	336:5
			276:13	336:11

336:12	335:12	<b>ies</b>	248:16	<b>pretty</b>
336:23	<b>policy</b>	338:17	260:7	238:12
337:18	325:12	<b>possibilit</b>	286:14	238:16
338:8	<b>political</b>	<b>y</b> 285:21	293:17	243:12
344:8	340:25	<b>possible</b>	<b>preschool</b>	243:14
344:8	341:1	241:12	334:17	255:1
347:21	<b>Pollet</b>	268:15	<b>prescripti</b>	260:2
347:24	236:4	279:11	<b>ve</b>	267:21
<b>plutonium-</b>	267:8	335:23	315:12	268:4
<b>contamin</b>	271:17	337:19	<b>presence</b>	325:22
<b>ated</b>	271:17	347:13	240:15	<b>prevent</b>
250:13	275:10	<b>posted</b>	241:15	244:4
258:24	291:22	294:4	243:19	259:13
<b>pockets</b>	293:22	<b>potential</b>	244:14	<b>prevents</b>
341:2	294:14	290:7	244:23	257:3
<b>point</b>	295:15	292:3	266:5	261:13
243:8	296:24	<b>pound</b>	269:17	<b>preview</b>
244:8	320:24	302:20	<b>present</b>	233:25
246:22	321:6	<b>power</b>	248:17	<b>previous</b>
278:2	341:17	282:14	323:6	325:20
278:18	344:2	332:3	324:1	<b>previously</b>
284:23	<b>polluted</b>	339:19	338:18	315:5
292:13	337:3	339:23	<b>presentati</b>	<b>primarily</b>
294:15	<b>poor</b>	340:17	<b>on</b> 292:2	256:4
294:22	345:19	340:23	<b>presented</b>	<b>primary</b>
294:22	<b>portion</b>	341:3	264:11	256:7
295:9	261:22	<b>powerful</b>	295:24	259:1
297:15	<b>Portland</b>	273:1	317:5	<b>principle</b>
312:17	230:25	<b>practices</b>	323:18	321:23
319:13	285:4	314:21	<b>presenting</b>	343:17
324:24	<b>poses</b>	315:21	235:5	<b>print</b>
348:8	336:12	<b>pre</b> 316:11	<b>President</b>	238:8
<b>pointed</b>	<b>position</b>	<b>precursor</b>	281:16	<b>prior</b>
271:1	265:10	297:19	<b>presume</b>	314:13
<b>points</b>	265:12	<b>prefer</b>	317:6	<b>priorities</b>
267:15	266:8	321:4	331:20	273:13
302:10	268:6	<b>preferred</b>	<b>presumptio</b>	<b>prioritize</b>
306:11	<b>possibilit</b>		<b>n</b> 313:23	
323:21				
323:22				

312:25	273:20	325:2	234:14	259:14
<b>priority</b>	280:21	334:14	248:14	266:5
298:15	282:8	<b>progress</b>	258:1	269:17
<b>private</b>	282:10	236:15	263:19	306:13
302:14	283:17	<b>progressio</b>	282:15	310:9
<b>probably</b>	283:22	<b>n</b> 242:21	295:24	310:13
234:9	288:17	<b>project</b>	302:2	310:18
236:17	294:2	235:11	336:16	310:20
238:23	303:19	243:7	336:23	310:22
243:25	317:16	249:19	337:16	311:3
263:5	323:15	335:25	342:22	312:18
265:11	337:11	<b>promises</b>	343:3	335:15
271:3	<b>processed</b>	273:6	344:14	<b>protected</b>
324:9	251:15	<b>proper</b>	<b>proposes</b>	310:3
326:7	288:4	286:4	337:4	336:4
<b>problem</b>	288:4	<b>property</b>	<b>proposing</b>	<b>protecting</b>
258:18	288:12	297:7	232:12	310:19
274:22	<b>processes</b>	<b>proportion</b>	234:1	311:2
274:23	241:1	<b>s</b> 330:6	234:3	<b>protection</b>
301:23	330:1	<b>proposal</b>	234:5	231:25
305:6	<b>processing</b>	245:24	234:7	233:8
330:6	251:14	266:2	234:8	249:19
339:24	253:19	275:11	264:6	267:25
<b>proceeding</b>	256:2	282:12	265:7	299:5
<b>s</b> 348:9	273:3	284:24	284:13	314:24
<b>process</b>	282:14	285:15	285:10	347:8
237:19	283:16	285:22	285:12	<b>protective</b>
246:2	305:24	297:17	286:3	246:7
247:8	<b>produce</b>	297:19	286:20	263:19
247:9	270:15	337:14	340:5	263:22
247:13	<b>profession</b>	338:18	<b>protect</b>	267:22
248:4	<b>al</b> 231:3	342:12	239:12	268:1
248:5	<b>program</b>	<b>proposals</b>	240:17	268:21
249:3	300:4	302:3	243:20	337:6
255:10	307:1	303:13	244:3	347:24
256:23	307:15	<b>proposed</b>	244:5	<b>protects</b>
257:11	308:5	231:14	244:8	337:13
265:2	308:6	233:15	245:10	<b>provide</b>
267:16	308:9		246:9	230:16
			247:5	

232:1	300:3	<b>pump</b>	335:19	291:21
237:23	300:13	241:23	<b>query</b>	297:1
237:23	301:15	242:1	343:10	301:9
246:7	301:25	251:2	<b>question</b>	301:11
257:2	303:11	251:3	257:21	303:22
261:9	303:22	260:6	277:21	306:15
262:22	310:7	<b>purpose</b>	278:22	311:16
262:24	310:9	232:10	282:2	311:17
262:24	310:13	237:1	282:23	313:8
263:12	310:15	<b>pushed</b>	284:11	319:4
300:14	325:25	342:16	286:23	319:25
320:2	327:16	<b>puts</b>	286:24	<b>quick</b>
320:16	335:16	257:15	287:3	293:1
341:25	337:10	<b>putting</b>	287:7	306:17
343:22	337:13	313:14	289:22	334:23
<b>provided</b>	341:25	313:16	289:25	<b>quickly</b>
345:16	342:13	313:21	297:15	235:8
<b>public</b>	342:14	326:1	304:4	237:13
232:3	342:15	<b>PW</b>	306:17	282:22
232:13	342:16	237:18	308:25	290:16
235:2	342:22	259:3	311:19	<b>quite</b>
236:20	343:2	<b>PW-1</b>	313:9	277:20
238:3	<b>publically</b>	233:16	316:22	<hr/>
244:3	342:2	233:20	317:7	R
244:5	<b>publicly</b>	251:20	320:24	<hr/>
245:17	294:10	253:6	323:18	<b>Radiance</b>
248:6	294:19	262:8	<b>question-</b>	335:7
248:9	<b>pull</b>	<b>PW-3</b>	<b>and</b>	347:19
265:4	259:23	233:21	318:18	<b>radiation</b>
268:2	271:12	262:3	<b>questions</b>	331:4
271:9	302:20	<b>PW-6</b> 262:8	235:21	332:1
277:16	324:25	262:15	235:23	<b>radioactiv</b>
285:3	<b>pulled</b>	<b>pyramids</b>	267:10	<b>e</b> 234:16
287:21	281:1	328:1	277:3	242:13
293:25	344:7	328:3	277:6	242:24
294:16	<b>pulling</b>	<hr/>	277:19	273:15
294:20	259:25	<b>Q</b>	282:1	285:3
294:23	260:1	<b>quantities</b>	286:25	307:15
296:21	325:5		287:15	307:25
297:7			289:19	313:13
298:21				

337:12	<b>Reach</b>	<b>lly</b>	311:24	255:23
<b>radioactiv</b>	239:3	324:8	312:6	255:24
<b>ity</b>	239:8	340:11	318:21	343:9
307:5	<b>reaches</b>	<b>realities</b>	321:16	<b>recent</b>
<b>radiograph</b>	283:7	291:13	328:20	247:1
<b>y</b> 283:18	<b>reaching</b>	<b>realized</b>	329:5	<b>recession</b>
<b>radionucli</b>	242:3	279:14	333:22	247:3
<b>de</b>	242:6	292:23	334:15	<b>reclassifi</b>
258:19	<b>reaction</b>	<b>really</b>	334:16	<b>cation</b>
<b>radionucli</b>	274:1	231:2	337:24	334:3
<b>des</b>	<b>reactor</b>	232:10	338:9	<b>recommend</b>
293:14	307:3	233:20	338:12	245:24
<b>radium</b>	<b>reactors</b>	233:21	338:20	322:14
256:9	239:25	233:23	341:23	<b>recommenda</b>
<b>raise</b>	243:1	236:9	342:14	<b>tions</b>
267:16	300:23	244:5	342:17	243:10
277:9	<b>reacts</b>	244:7	342:19	287:21
<b>Randal</b>	287:8	244:20	342:20	317:4
329:21	<b>readable</b>	246:2	348:5	<b>recommende</b>
<b>range</b>	238:12	254:1	348:6	<b>d</b> 322:10
268:8	<b>reading</b>	254:8	<b>realtime</b>	<b>recommendi</b>
270:21	343:21	254:22	316:8	<b>ng</b>
304:16	<b>real</b>	255:9	338:5	266:17
323:8	233:14	255:15	338:7	<b>reconnecte</b>
323:9	236:17	259:4	338:11	<b>d</b> 334:13
323:9	248:10	262:21	<b>reason</b>	<b>reconsider</b>
336:15	266:12	265:5	265:13	330:2
<b>ranges</b>	333:10	265:14	265:18	337:5
323:7	333:25	270:10	265:19	<b>record</b>
<b>rate</b> 305:2	338:4	271:20	270:21	247:15
<b>rather</b>	343:7	271:23	293:16	248:23
336:25	343:20	277:5	320:25	248:23
<b>rational</b>	<b>realistic</b>	281:1	<b>recall</b>	276:18
266:12	290:6	295:16	325:22	276:19
<b>Rattlesnak</b>	291:11	297:13	<b>receive</b>	294:18
<b>e</b> 239:17	328:23	301:20	318:23	328:8
	331:18	305:6	<b>received</b>	333:25
	<b>realistica</b>	305:18	231:17	343:8
		307:11	251:25	
		307:24	252:10	

343:9	<b>regardless</b>	295:8	319:17	258:1
<b>recorded</b>	324:25	<b>released</b>	<b>remediatio</b>	258:2
277:8	<b>regime</b>	284:7	<b>n</b>	259:18
<b>recover</b>	330:17	288:12	235:6	260:22
316:7	<b>region</b>	298:19	236:12	260:24
<b>recovering</b>	317:10	298:25	237:9	260:25
315:25	<b>regional</b>	<b>relevant</b>	237:20	261:22
316:6	268:8	282:11	238:15	261:24
<b>rectangle</b>	<b>regulation</b>	306:10	239:25	280:4
243:13	314:16	<b>reliable</b>	242:8	282:4
<b>red</b> 249:25	<b>regulation</b>	274:12	243:5	282:24
<b>reddish</b>	<b>s</b> 315:6	308:21	245:23	315:3
240:12	<b>regulators</b>	<b>remain</b>	248:11	315:13
<b>redefiniti</b>	231:24	<b>remainder</b>	248:25	321:21
<b>ons</b>	233:7	232:14	249:4	335:14
334:4	<b>rehear</b>	<b>remaining</b>	258:22	335:23
<b>reduce</b>	317:11	301:9	317:19	336:22
311:25	<b>reinjectin</b>	310:5	<b>remedy</b>	336:25
<b>reduction</b>	<b>g</b> 251:5	<b>remains</b>	310:2	337:8
246:8	<b>rejected</b>	261:16	<b>remember</b>	<b>removed</b>
311:24	330:19	262:13	276:18	312:10
<b>reevaluate</b>	337:1	<b>remedial</b>	325:20	<b>removing</b>
<b>d</b> 303:13	<b>related</b>	247:17	329:22	264:20
332:6	303:19	247:23	329:24	337:11
<b>referenced</b>	<b>relations</b>	254:4	341:19	<b>renegotiat</b>
294:13	342:3	256:10	348:1	<b>ed</b> 332:3
304:22	<b>relative</b>	273:20	<b>remind</b>	<b>repaired</b>
<b>referred</b>	260:5	296:7	339:1	295:1
282:4	312:10	302:5	<b>remobilize</b>	<b>repeat</b>
<b>referring</b>	<b>release</b>	<b>remediate</b>	266:8	272:17
232:25	243:22	240:15	<b>removal</b>	<b>repeatedly</b>
<b>regarding</b>	243:23	242:13	322:9	269:21
292:2	255:15	245:25	324:7	271:10
323:3	255:15	289:13	338:21	<b>reply</b>
323:17	278:22	291:20	<b>remove</b>	310:8
325:7	278:24	<b>remediated</b>	240:4	<b>report</b>
	278:25	251:1	256:19	302:9
			256:21	308:11
			256:22	

<b>reporter</b>	314:12	239:16	241:21	245:15
277:8	316:12	<b>resources</b>	<b>reverse</b>	245:16
335:2	318:24	338:20	262:19	245:17
335:3	319:20	<b>respond</b>	<b>review</b>	254:2
<b>reports</b>	<b>representa</b>	320:3	343:19	256:7
301:21	<b>tives</b>	<b>responded</b>	343:21	259:1
302:8	301:13	320:8	<b>reviewing</b>	262:20
308:7	301:17	<b>response</b>	265:3	291:20
<b>repository</b>	329:11	320:16	<b>reviews</b>	292:23
274:25	329:11	320:17	247:15	292:24
275:7	<b>represente</b>	<b>responsibi</b>	<b>revised</b>	306:12
276:4	<b>d</b> 286:20	<b>lity</b>	302:1	315:10
281:6	305:21	270:13	<b>revision</b>	315:22
281:9	<b>requesting</b>	<b>responsibl</b>	342:22	322:8
281:11	347:21	<b>e</b> 239:5	<b>revisit</b>	336:12
281:20	<b>require</b>	<b>rest</b>	249:8	344:16
282:25	272:7	299:19	289:8	344:21
283:9	<b>required</b>	328:15	<b>rewarded</b>	344:22
283:13	262:16	340:15	344:10	345:2
313:15	275:14	<b>rests</b>	<b>Ribbon</b>	<b>risks</b>
313:21	275:19	268:21	281:15	248:2
314:25	321:20	268:24	283:6	248:3
315:14	331:24	336:4	<b>Richland</b>	248:5
316:10	<b>requires</b>	<b>results</b>	234:23	335:16
316:20	328:22	345:10	238:2	<b>river</b>
319:18	<b>rescission</b>	<b>retired</b>	238:25	230:14
335:24	246:17	333:20	308:14	230:24
338:22	<b>research</b>	<b>retirement</b>	<b>rid</b> 345:13	232:4
<b>representa</b>	289:4	333:18	<b>RIFS</b>	239:20
<b>tive</b>	<b>resent</b>	<b>retrieve</b>	294:13	239:22
298:14	292:25	280:8	294:14	239:23
299:24	<b>reservatio</b>	280:9	<b>right-hand</b>	240:2
300:3	<b>n</b> 300:5	286:13	310:17	240:3
300:9	<b>resident</b>	<b>retroactiv</b>	<b>ring</b> 330:4	240:5
300:21	325:18	<b>e</b> 315:8	<b>risk</b> 240:4	240:22
300:21	335:8	<b>return</b>	245:15	240:22
301:10	<b>Resort</b>			241:20
302:18				241:21
304:12				242:3
304:15				242:6
313:3				267:7
				267:21

269:22	317:16	<b>y</b>	252:25	292:14
269:23	<b>rocket</b>	255:3	254:18	303:6
272:13	274:21	278:19	258:17	306:18
275:18	276:1	279:6	258:17	307:19
276:15	<b>rocks</b>	<b>rule</b>	262:1	323:3
290:20	329:24	274:24	275:1	336:10
304:17	<b>role</b>	<b>run</b> 232:14	287:19	<b>saving</b>
304:18	230:21	266:20	309:10	231:5
305:9	230:21	275:2	322:18	<b>saw</b>
305:9	231:25	321:7	<b>sample</b>	236:4
305:13	235:2	341:13	280:9	313:15
307:1	264:14	<b>runners</b>	288:19	313:17
307:5	<b>roles</b>	305:10	302:21	323:19
307:7	247:23	<b>running</b>	302:24	<b>scale</b>
307:16	<b>room</b>	267:3	303:1	270:3
308:1	231:17	277:12	303:4	298:1
308:2	275:2	331:13	309:21	312:8
308:6	285:8	<hr/>	<b>sampled</b>	<b>scales</b>
308:6	342:10	<u>S</u>	288:18	304:7
308:14	<b>rough</b>	<b>sacred</b>	303:9	<b>scar</b> 331:2
308:16	298:1	328:19	<b>samples</b>	<b>schedule</b>
321:13	<b>roughly</b>	<b>safe</b>	247:18	267:4
321:24	269:3	241:17	287:7	<b>scheme</b>
325:18	<b>Rowena</b>	313:25	293:7	299:16
326:17	291:6	332:4	293:8	<b>schmooze</b>
327:19	291:7	338:1	293:15	334:21
331:1	<b>RTD</b> 256:20	344:17	302:19	<b>science</b>
332:10	261:24	<b>safeguard</b>	303:7	274:21
335:8	262:11	327:22	303:18	276:1
336:7	280:4	<b>safer</b>	304:21	328:25
336:13	282:23	332:7	305:15	329:1
342:4	<b>rubber</b>	<b>safety</b>	307:23	333:4
345:7	345:16	314:5	308:13	333:5
347:7	345:17	317:17	<b>sampling</b>	<b>scientific</b>
347:19	<b>Ruder</b>	<b>Salmon</b>	266:19	292:8
<b>riveted</b>	337:22	337:23	272:24	294:6
333:23	<b>rudimentar</b>	<b>salt</b>	292:2	326:23
<b>Robbie</b>		252:18	292:7	329:6
330:25			292:8	
<b>robust</b>				

329:6	276:3	289:24	236:5	<b>septic</b>
339:25	296:1	290:3	<b>send</b>	253:10
<b>scientific</b>	304:1	290:7	273:14	278:12
<b>ally</b>	323:17	290:14	274:24	<b>serious</b>
341:4	343:1	290:16	275:5	329:5
341:5	343:20	290:17	276:22	<b>seriously</b>
<b>screen</b>	<b>sector</b>	290:20	285:19	237:25
321:3	302:14	291:2	286:11	238:5
<b>screened</b>	<b>sediments</b>	291:4	286:15	<b>serve</b>
316:20	253:16	291:20	335:23	235:2
<b>sealed</b>	<b>seeded</b>	317:2	<b>sense</b>	238:3
302:17	301:15	317:9	231:12	279:2
<b>search</b>	<b>seeing</b>	317:13	233:17	<b>service</b>
343:10	292:1	317:17	233:18	347:8
<b>searching</b>	292:4	317:23	234:19	<b>session</b>
294:16	292:7	326:12	239:24	262:25
<b>seat</b> 321:5	<b>seem</b>	326:13	272:20	<b>sets</b>
<b>seats</b>	323:23	329:16	312:23	233:10
321:1	333:7	330:2	<b>senses</b>	298:23
<b>Seattle</b>	<b>seems</b>	330:8	347:12	338:10
238:2	255:9	332:6	<b>sensitive</b>	<b>settling</b>
290:21	282:11	345:9	307:10	258:17
<b>second</b>	295:22	346:14	<b>sensitivit</b>	262:9
241:7	304:22	<b>seismicall</b>	<b>y</b> 307:9	<b>several</b>
250:7	305:1	<b>y</b> 290:12	<b>sent</b> 275:2	285:1
259:9	305:3	<b>select</b>	294:16	302:2
260:15	305:5	248:16	331:24	333:19
265:23	305:6	<b>selected</b>	<b>sentiment</b>	<b>shallow</b>
270:6	318:19	285:22	270:9	255:1
289:21	324:24	298:15	<b>separate</b>	256:6
297:16	327:8	<b>self</b>	253:21	256:6
320:13	327:11	273:25	<b>separated</b>	262:2
325:5	340:13	<b>self-</b>	253:11	314:23
335:12	<b>seen</b>	<b>explanat</b>	<b>separation</b>	<b>shallower</b>
339:5	230:20	<b>ory</b>	283:17	256:7
339:10	238:23	254:13	<b>September</b>	<b>shape</b>
347:20	264:17	<b>semi</b>	263:9	252:8
<b>secondly</b>	333:19	282:16	<b>seminar</b>	
	<b>seismic</b>			

<b>share</b>	314:10	289:11	307:3	275:5
264:4	<b>showed</b>	<b>similar</b>	328:5	276:8
276:21	279:5	252:3	<b>sipping</b>	278:23
295:5	292:17	253:13	272:12	278:25
<b>shared</b>	310:10	276:14	<b>sir</b> 232:24	279:1
232:4	<b>showing</b>	278:12	<b>sit</b>	279:4
267:7	236:21	302:4	333:5	290:15
<b>shares</b>	<b>shown</b>	302:8	333:10	290:17
347:11	239:21	305:18	340:20	291:20
<b>sheet</b>	314:23	<b>similariti</b>	<b>site</b> 233:6	297:5
343:6	<b>shows</b>	<b>es</b>	236:9	297:9
<b>sheets</b>	254:15	251:23	236:12	298:18
276:20	254:18	252:1	236:17	299:1
<b>shell</b>	279:5	<b>simple</b>	238:18	299:22
278:16	308:9	246:2	239:13	300:22
<b>Sherrer</b>	312:8	260:2	242:22	303:5
267:8	336:10	<b>simpler</b>	242:24	304:7
267:13	<b>shrink</b>	341:7	242:25	308:15
347:6	241:10	<b>simplified</b>	245:19	318:10
<b>ship</b>	<b>shrinking</b>	253:14	245:25	325:23
280:14	239:14	<b>simplistic</b>	247:13	325:24
<b>shipments</b>	241:9	<b>ally</b>	249:4	326:3
286:12	<b>shrunk</b>	237:12	255:15	327:8
<b>shipped</b>	239:6	<b>simply</b>	255:15	327:11
282:17	239:7	268:17	255:16	337:11
283:2	<b>shut</b> 307:3	270:19	255:20	338:1
316:3	<b>sick</b> 303:6	324:12	256:24	338:14
<b>short</b>	<b>sight</b>	333:15	258:5	338:20
336:16	318:20	335:22	258:5	<b>sites</b>
337:14	340:19	<b>simulation</b>	258:21	231:14
<b>shortly</b>	<b>significan</b>	293:9	258:23	231:15
311:16	<b>t</b> 260:11	293:13	259:3	233:23
<b>short-term</b>	261:22	<b>sincere</b>	261:7	234:1
246:6	<b>significan</b>	333:8	262:7	234:4
246:8	<b>tly</b>	333:8	264:10	234:11
311:23	302:1	333:9	269:10	234:14
<b>shot</b>	<b>signs</b>	<b>single</b>	269:17	234:15
		302:25	270:8	235:6
			272:24	235:12
			274:16	236:7
				237:19

238:15	264:20	336:18	<b>slowly</b>	272:1
239:3	264:22	336:24	300:16	272:7
239:6	264:23	336:25	<b>small</b>	272:11
239:11	265:10	337:7	241:6	273:8
239:12	266:6	337:18	241:12	293:5
239:25	266:10	344:17	244:17	302:18
242:13	268:17	<b>site's</b>	244:18	302:21
243:5	270:19	294:17	251:9	303:1
247:16	272:1	<b>situation</b>	308:2	303:3
248:11	272:2	287:12	<b>smaller</b>	321:21
249:20	274:13	<b>six</b> 233:23	290:25	331:19
249:23	275:25	233:25	<b>soil</b>	331:21
249:24	280:19	254:10	235:12	335:20
250:5	280:20	254:11	244:7	336:5
250:5	280:22	307:20	251:17	336:11
250:10	282:13	<b>size</b>	252:16	337:4
250:11	285:1	236:10	252:19	341:20
250:13	291:24	272:20	252:23	344:9
250:23	292:2	329:24	253:12	346:12
250:25	292:6	<b>skip</b>	255:12	<b>soil-</b>
251:11	292:8	272:17	256:14	<b>contamin</b>
251:11	293:16	<b>slide</b>	256:21	<b>ated</b>
251:18	293:19	258:10	256:22	250:23
251:22	298:5	310:10	257:4	<b>soils</b>
252:1	298:13	310:16	257:19	292:5
252:5	298:14	<b>slides</b>	257:20	<b>solely</b>
252:10	299:7	236:1	258:3	292:1
252:12	302:11	236:15	259:11	<b>solid</b>
252:18	303:19	236:19	259:20	253:8
252:25	306:5	272:17	260:1	297:18
253:2	306:6	275:10	260:17	297:20
253:4	310:12	289:18	260:22	298:19
253:5	312:24	<b>slight</b>	262:2	299:10
253:25	313:2	330:5	262:5	299:12
254:7	313:2	<b>slopes</b>	262:19	315:5
258:14	313:4	304:17	265:15	315:18
258:20	313:5	<b>slowed</b>	265:17	<b>solidify</b>
262:5	323:7	305:3	265:20	284:1
262:16	330:19		265:24	<b>solids</b>
264:1	335:20		269:12	
264:8	336:16			

253:10	325:12	234:20	318:3	330:19
273:1	345:9	236:14	319:9	<b>specifics</b>
<b>Soloney</b>	<b>sound</b>	245:1	321:12	249:13
235:18	232:22	245:3	322:24	<b>spectral</b>
<b>solution</b>	323:23	277:21	325:16	293:10
310:22	333:9	279:20	325:17	<b>speed</b>
<b>solvents</b>	340:8	280:11	327:18	261:17
273:2	<b>sounded</b>	282:4	329:9	<b>spell</b>
276:11	333:8	283:2	330:14	331:10
<b>somebody</b>	<b>sounds</b>	284:12	330:25	<b>spelling</b>
299:23	239:9	284:18	332:9	331:8
314:10	255:15	284:22	335:7	<b>spend</b>
344:1	257:1	285:9	337:22	345:12
<b>someone</b>	272:11	285:15	339:5	<b>spending</b>
310:20	304:3	285:24	339:11	300:12
<b>somewhat</b>	<b>soup</b>	286:6	339:18	300:12
255:10	243:14	286:15	345:6	<b>spent</b>
312:3	<b>source</b>	286:17	345:15	303:5
329:18	308:16	287:2	345:23	<b>spirit</b>
<b>somewhere</b>	<b>sources</b>	289:23	346:2	322:5
280:14	298:18	290:5	346:6	<b>split</b>
281:9	<b>sourdine</b>	290:11	346:9	237:5
283:5	283:20	291:6	346:13	<b>spoke</b>
<b>Sonya</b>	283:21	291:10	346:17	285:6
235:15	<b>south</b>	293:24	346:24	<b>spot</b> 274:9
277:12	239:1	294:1	347:6	274:9
321:7	<b>span</b>	294:11	347:18	<b>spread</b>
<b>sooner</b>	304:22	297:3	<b>speakers</b>	276:7
334:10	<b>speak</b>	298:7	231:19	<b>square</b>
<b>sorry</b>	237:11	298:11	277:1	238:24
267:3	239:4	299:21	<b>specific</b>	239:14
321:7	333:7	300:1	258:19	239:21
<b>sort</b>	<b>speaker</b>	300:6	277:25	240:10
267:14	231:21	303:24	278:21	240:11
271:7	231:23	304:20	<b>specifically</b> 241:5	240:12
277:24	232:25	306:17	310:9	<b>St</b> 329:22
278:1	233:3	308:20	310:12	
291:23	233:13	313:9	311:1	
		313:20		
		316:23		
		317:1		

<b>stability</b>	324:4	243:4	257:3	341:6
291:3	<b>standardiz</b>	303:10	<b>stem</b>	<b>stopped</b>
291:4	<b>ed</b> 278:5	<b>starting</b>	302:25	307:14
<b>stabilize</b>	<b>standards</b>	242:12	<b>step</b>	341:20
262:10	241:22	<b>starts</b>	231:25	344:5
284:4	241:23	283:11	248:15	<b>stopping</b>
<b>stabilized</b>	250:19	<b>state</b>	264:14	268:15
281:2	314:3	230:18	270:16	309:24
<b>stable</b>	347:22	230:21	<b>stepping</b>	<b>stops</b>
260:14	<b>standing</b>	233:7	258:25	336:16
261:16	321:2	248:8	<b>steps</b>	<b>storage</b>
269:1	329:23	264:16	248:22	244:13
269:10	<b>stand-</b>	266:24	<b>steward</b>	316:1
270:7	<b>off</b>	270:8	340:5	319:18
287:9	259:14	273:22	<b>stewards</b>	<b>story</b>
288:14	<b>standpoint</b>	283:8	273:12	236:9
288:15	236:25	289:1	<b>stewardshi</b>	246:18
288:16	311:1	302:3	<b>p</b>	329:3
288:25	<b>stands</b>	306:25	249:6	<b>straight</b>
306:7	237:18	307:22	301:3	273:8
311:8	<b>starkly</b>	321:20	327:5	<b>strains</b>
312:20	267:21	322:15	340:9	327:25
<b>stage</b>	<b>start</b>	325:23	<b>stick</b>	<b>strategica</b>
239:20	245:7	329:11	339:3	<b>lly</b>
262:21	247:13	330:7	<b>sticking</b>	238:11
<b>stamp</b>	260:8	<b>statement</b>	341:18	<b>strategies</b>
345:16	268:4	337:16	341:23	242:9
345:17	277:16	<b>states</b>	348:6	<b>strategy</b>
<b>stand</b>	312:18	307:21	<b>stood</b>	238:14
253:4	318:17	<b>statistica</b>	274:15	240:6
277:18	319:1	<b>l</b> 323:11	<b>stop</b> 242:2	284:10
328:15	320:12	<b>stay</b>	242:5	<b>straw</b>
340:25	320:22	265:13	266:22	272:12
<b>standard</b>	343:2	283:8	293:4	<b>stream</b>
242:4	<b>started</b>	318:13	300:25	286:10
249:10	233:12	328:19	308:22	286:10
275:12	236:3	346:4	324:19	286:14
275:23	242:22	346:19	340:16	
276:13		<b>stays</b>		

<b>Street</b>	295:7	293:1	256:25	340:15
321:13	296:2	295:3	257:1	<b>talk</b> 230:8
329:9	297:18	301:21	259:15	231:9
<b>string</b>	298:7	<b>summer</b>	266:5	231:22
303:7	298:11	230:8	276:5	234:12
<b>strongly</b>	298:12	<b>SuperFund</b>	313:13	234:13
322:14	305:8	275:5	<b>surprise</b>	234:16
325:23	308:2	329:17	265:11	235:6
<b>structure</b>	313:6	<b>support</b>	<b>surroundin</b>	236:8
260:22	322:7	230:11	<b>g</b> 324:13	237:6
309:11	323:11	230:14	<b>sustain</b>	237:14
309:11	324:25	286:4	328:23	237:23
310:5	325:20	<b>supposed</b>	<b>sustainabl</b>	238:6
312:10	326:2	274:24	<b>e</b> 340:17	238:17
<b>structures</b>	326:2	280:13	341:4	241:4
261:1	326:22	280:13	341:5	241:7
278:3	332:15	313:14	<b>sustaining</b>	242:15
<b>struggling</b>	334:5	342:1	274:1	248:11
339:24	345:13	343:12	<b>sweeping</b>	249:12
<b>stuck</b>	<b>submarine</b>	<b>supposedly</b>	269:21	250:6
335:5	243:2	344:17	<b>system</b>	254:6
<b>student</b>	<b>submit</b>	<b>sure</b>	251:3	258:11
295:18	263:2	241:16	251:4	260:15
332:14	<b>subsistenc</b>	245:6	253:10	265:23
<b>studies</b>	<b>e</b> 344:20	256:16	260:18	271:15
248:1	<b>substances</b>	256:17	278:12	279:3
280:9	335:17	277:10		281:13
289:5	<b>sucking</b>	280:10		282:22
301:22	251:4	281:8		287:23
345:8	<b>sufficient</b>	295:8		292:11
345:11	324:17	302:15	<b>table</b>	299:24
<b>stuff</b>	<b>suggesting</b>	312:12	235:16	301:1
255:12	275:24	316:9	267:16	301:1
257:7	<b>summarize</b>	317:21	295:3	301:2
269:11	247:21	325:13	323:5	331:3
272:14	<b>summarized</b>	328:25	<b>taking</b>	339:4
272:14	337:15	<b>surface</b>	287:20	<b>talked</b>
280:12	<b>summary</b>	252:17	310:23	231:10
		252:24	312:3	237:1
			312:19	241:19
				243:25

244:16	299:18	<b>target</b>	231:2	264:13
249:6	299:18	242:4	231:12	267:12
254:10	301:20	<b>targeted</b>	265:7	271:19
255:5	306:21	303:3	267:3	276:17
258:3	309:4	<b>taxpayer</b>	269:15	276:24
258:11	309:5	246:25	274:13	276:25
259:16	312:8	<b>team</b> 235:9	277:3	286:23
259:17	313:1	235:10	283:24	296:19
259:19	317:18	<b>technical</b>	307:24	296:24
260:10	319:9	265:14	334:4	299:21
279:1	321:3	<b>technologi</b>	<b>terrorist</b>	306:14
279:12	326:1	<b>es</b>	327:11	316:23
305:15	330:23	255:11	<b>tested</b>	321:14
<b>talking</b>	339:22	<b>technology</b>	254:1	321:14
231:13	<b>talks</b>	260:2	273:19	322:20
234:18	301:6	<b>tectonic</b>	<b>testimony</b>	325:15
236:24	314:17	290:22	232:19	327:13
237:9	<b>tank</b>	330:5	308:20	327:15
237:16	253:11	<b>temporaril</b>	335:11	329:8
237:20	262:9	<b>y</b> 316:1	<b>tet</b>	329:10
244:24	262:12	<b>ten</b> 266:21	260:1	330:10
245:7	262:12	269:3	323:10	330:11
254:19	262:13	275:16	<b>tetrachlor</b>	330:24
267:15	262:14	<b>tens</b> 245:1	<b>ide</b>	332:8
268:5	280:23	245:3	259:2	334:22
269:1	<b>tanker</b>	245:6	259:22	335:4
269:12	321:19	269:13	260:4	337:20
270:4	<b>tanks</b>	303:4	288:5	337:21
272:2	234:7	327:24	<b>Texas</b>	338:23
277:22	253:6	336:8	283:2	339:17
278:23	253:7	<b>term</b>	283:5	341:17
280:19	253:8	243:18	<b>text</b> 302:8	342:9
280:23	253:16	244:23	<b>thank</b>	345:5
281:19	258:17	244:24	230:6	345:14
282:21	262:10	268:2	230:7	345:25
283:16	281:1	327:4	231:7	347:15
287:16	281:2	<b>terms</b>	263:10	347:16
291:2	281:24	243:18	263:11	347:18
291:14	287:4	244:23	264:12	348:4
291:23	287:13	244:24		348:7
297:3		268:2		
		327:4		
		<b>Thanks</b>		

322:24	315:13	<b>thresholds</b>	316:5	313:18
334:21	<b>thousand</b>	319:10	326:1	320:2
<b>thank-yous</b>	275:16	<b>threw</b>	326:10	321:14
235:1	328:4	246:21	<b>toilet</b>	327:4
<b>that's</b>	332:25	<b>throat</b>	253:10	329:13
272:15	347:24	331:2	<b>tonight</b>	333:8
276:14	<b>thousands</b>	<b>throughout</b>	230:9	341:24
283:7	244:24	243:10	230:22	342:6
284:21	245:1	<b>throw</b>	231:7	347:8
297:18	245:4	246:20	231:12	<b>top</b>
316:25	245:6	<b>thyroid</b>	231:13	257:2
322:13	269:13	331:3	233:15	259:12
331:24	302:10	331:4	234:18	261:11
347:3	302:10	<b>Tibet</b>	235:1	340:1
<b>theme</b>	303:4	325:9	235:7	345:1
287:17	303:18	<b>Tibetan</b>	235:20	<b>topic</b>
<b>themselves</b>	323:4	325:10	236:25	230:25
292:3	323:14	<b>tight</b>	237:9	<b>topics</b>
<b>thermal</b>	327:23	231:2	237:20	284:21
283:25	327:24	<b>tile</b>	238:9	<b>total</b>
<b>thermally</b>	336:6	253:13	238:21	240:9
284:5	336:8	255:14	242:15	304:12
<b>third</b>	340:6	292:17	245:16	<b>totally</b>
252:21	340:9	309:8	247:11	334:7
<b>thirdly</b>	<b>thousandth</b>	<b>tips</b>	248:12	342:11
276:6	332:23	300:18	248:17	<b>tour</b>
324:2	<b>threat</b>	234:22	249:21	297:10
324:17	254:2	<b>title</b>	250:10	300:20
<b>Thomas</b>	<b>three-word</b>	242:3	250:21	300:21
332:20	304:4	243:12	251:9	300:25
<b>thorough</b>	<b>threshold</b>	281:14	254:1	<b>tours</b>
270:17	245:22	288:16	262:23	297:9
271:10	245:25	305:22	270:4	300:4
330:18	283:7	308:2	271:20	300:13
<b>thoroughly</b>	283:15	315:6	272:2	<b>towards</b>
317:21	319:11	315:15	280:20	276:12
<b>thou</b>	319:15		295:8	<b>toxic</b>
	319:16		299:18	282:10
	319:23		299:23	
			308:20	
			313:2	

<b>toxicity</b>	258:3	279:23	<b>parties</b>	248:3
246:8	259:18	280:3	231:15	267:9
311:25	260:6	288:1	233:4	272:13
<b>Toxics</b>	261:24	292:15	265:6	294:18
308:6	280:4	292:17	318:22	295:13
329:17	280:6	297:24	<b>tri-</b>	333:11
<b>TPA</b> 248:9	282:5	344:18	<b>party</b>	338:7
	282:24	344:21	232:11	343:12
<b>track</b>	284:5	<b>trenched</b>	233:1	<b>trying</b>
333:25	335:15	324:19	233:9	233:25
<b>transfer</b>	337:8	<b>trenches</b>	233:11	235:24
240:1	<b>treated</b>	252:13	248:19	236:11
<b>transferen</b>	344:7	254:17	263:4	241:10
<b>ce</b> 322:3	<b>treating</b>	254:18	303:15	241:21
<b>transferen</b>	251:5	255:17	340:11	241:24
<b>tial</b>	274:6	256:5	<b>tri-public</b>	242:4
314:15	337:12	273:19	303:14	257:9
314:22	<b>treatment</b>	274:6	<b>troubling</b>	257:10
<b>transient</b>	281:4	277:22	271:15	278:16
281:21	282:7	278:3	<b>truckloads</b>	279:23
<b>transparen</b>	283:11	278:8	340:6	286:17
<b>t</b> 295:11	283:24	278:18	<b>trucks</b>	295:6
327:1	283:25	279:5	282:16	295:19
327:3	341:21	279:6	<b>true</b> 258:6	297:5
<b>travel</b>	<b>trench</b>	279:9	258:6	298:4
252:15	255:19	297:18	274:12	300:7
252:19	255:21	297:22	281:9	300:10
252:23	272:19	313:16	281:10	302:23
<b>traveled</b>	272:21	313:22	281:21	343:21
253:23	273:18	316:6	283:7	<b>Tuesday</b>
<b>traveling</b>	275:21	341:21	283:15	230:3
286:13	277:23	344:6	315:25	<b>turbulent</b>
<b>treat</b>	277:23	344:25	316:3	269:23
242:1	277:24	<b>tri</b> 238:25	319:10	<b>turn</b> 247:6
251:2	278:1	325:3	319:11	247:8
251:3	278:7	329:18	319:17	249:14
256:19	278:17	<b>tribes</b>	<b>trusting</b>	<b>turned</b>
258:1	279:14	248:7	273:12	240:23
	279:15	268:11	<b>try</b> 232:20	280:14
	279:15	<b>tri-</b>		

<b>turnout</b> 321:14	<b>uncomfortable</b> 265:9	315:2 335:9	273:10 344:6	284:6
<b>turns</b> 257:19	<b>underestimate</b> 344:15	<b>unimaginable</b> 338:9 338:12	<b>upper</b> 332:10	<b>variations</b> 255:8
<b>twist</b> 333:12	<b>underground</b> 274:25	<b>unique</b> 250:17 252:25	<b>upping</b> 332:4	<b>various</b> 243:10 309:8
<b>two-foot</b> 323:22	275:7	<b>unit</b> 233:21	<b>uranium</b> 240:1 299:14 299:15 299:19	<b>vast</b> 272:10 282:12
<b>tying</b> 248:13	276:4 297:17	<b>units</b> 233:16 237:15 251:19 253:7	<b>urge</b> 276:13 337:5	<b>verbal</b> 262:24
<b>type</b> 250:15 251:25 252:4	<b>underneath</b> 261:13 275:20 292:18 303:6 315:24 316:14	<b>University</b> 307:22	<b>user</b> 305:13	<b>version</b> 253:14
<b>types</b> 258:15 278:18 316:15	<b>understand</b> 233:20 233:22 236:23 237:11 238:9 238:13 249:12 300:9 311:7 330:16 334:5	<b>unknowns</b> 322:2	<b>usually</b> 253:12	<b>versions</b> 343:10
<b>typically</b> 264:9		<b>unless</b> 283:9 293:20 314:23 315:3 346:2	<hr/> <b>v</b> <hr/>	<b>versus</b> 233:21 277:6 278:7
<hr/> <b>U</b> <hr/>		<b>unplanned</b> 255:14 255:15 278:22 278:24 278:25 279:12	<b>vacuum</b> 259:23 260:2	<b>via</b> 231:18
<b>U.S</b> 233:4 233:8 234:20 284:25 337:17		<b>unreasonable</b> 270:7	<b>valid</b> 295:7	<b>view</b> 265:6 266:13 267:22
<b>ugly</b> 244:19	<b>understanding</b> 313:10 323:15	<b>unsafe</b> 313:12	<b>valley</b> 332:10	<b>viewpoint</b> 232:3
<b>unable</b> 295:20	<b>undisciplined</b> 255:10	<b>untreated</b> 273:8	<b>value</b> 312:18	<b>villain</b> 333:24
<b>unacceptab le</b> 335:22	<b>Unfortunat ely</b>		<b>vapor</b> 259:20 259:24 259:24 260:4 260:17 272:11 272:15	<b>virtually</b> 315:7
<b>unbelievab le</b> 338:2			<b>visit</b> 297:6 297:9 299:22	<b>visits</b> 300:15
			<b>visual</b>	

309:1	273:22	252:10	281:10	319:17
<b>vitricat</b>	283:8	252:10	281:10	330:17
<b>ion</b>	287:3	252:15	281:21	330:21
257:13	307:21	252:20	281:22	330:22
257:14	324:22	253:5	282:13	335:20
259:16	329:21	253:20	282:15	335:24
280:13	337:23	253:21	283:1	335:25
<b>vitricied</b>	<b>wasn't</b>	253:22	283:11	336:15
281:3	255:21	254:7	283:12	336:17
281:23	278:23	256:23	284:12	336:18
<b>vitricies</b>	341:21	258:6	285:2	336:24
257:19	<b>waste</b>	258:7	285:3	336:25
<b>vitricy</b>	231:14	258:13	285:16	337:7
281:4	231:15	260:9	286:9	337:18
<b>vocal</b>	233:23	260:9	286:10	338:19
310:8	234:1	261:21	286:11	338:22
<b>voice</b>	234:4	262:1	286:14	340:6
271:21	234:5	262:4	286:19	341:20
347:9	234:10	262:5	286:21	344:6
<b>volume</b>	234:11	262:9	287:8	344:6
230:1	234:14	262:15	291:25	<b>wastes</b>
246:9	234:15	263:25	292:12	273:8
<b>volumes</b>	242:24	264:6	297:18	337:13
268:5	249:20	264:8	297:20	<b>wastewater</b>
<b>volunteers</b>	249:23	264:10	298:5	252:23
295:18	249:24	264:22	298:19	253:9
<b>vote</b>	250:10	265:22	298:20	<b>watchdog</b>
339:12	250:11	266:10	299:7	268:12
<hr/>	250:13	270:19	299:10	<b>watching</b>
W	250:13	273:10	299:13	329:24
<b>walk</b>	251:10	273:13	309:12	<b>water</b>
271:23	251:11	273:14	313:13	237:18
<b>walls</b>	251:16	273:15	314:13	237:19
269:20	251:18	274:5	314:22	240:3
324:19	251:22	274:10	315:3	241:21
<b>Washington</b>	251:24	274:13	315:4	241:22
233:7	251:25	278:23	315:5	241:22
	252:1	280:24	315:6	241:23
	252:3	281:3	315:25	242:4
	252:5	281:5	316:3	243:23
	252:6	281:5	316:13	
	252:9			

251:6	<b>weeks</b>	316:2	321:15	347:10
253:11	230:23	317:22	340:5	347:10
254:14	263:5	<b>White</b>	<b>work</b>	<b>worst</b>
255:23	269:24	269:25	230:17	292:16
257:4	<b>welcome</b>	337:23	249:18	313:5
257:6	264:2	<b>whole</b>	268:19	<b>worth</b>
257:8	322:21	298:6	269:7	271:3
258:25	<b>wells</b>	<b>wide</b>	270:20	272:6
261:10	293:4	272:21	295:12	<b>wrap</b> 275:8
261:13	293:10	<b>wife</b> 300:7	297:14	344:2
269:21	293:11	<b>Wildlife</b>	312:25	<b>wrapping</b>
278:10	302:12	240:25	329:18	236:10
280:21	324:13	<b>willing</b>	334:17	<b>write</b>
280:24	<b>west</b> 250:2	265:12	<b>worked</b>	233:13
280:25	250:5	266:2	333:16	<b>written</b>
289:12	250:12	318:13	<b>worker</b>	263:2
304:18	251:2	339:3	244:6	332:15
305:4	253:22	<b>winds</b>	245:18	<b>wrong</b>
324:18	<b>western</b>	331:20	310:18	289:7
324:20	290:18	<b>windsurfer</b>	310:19	334:14
330:14	<b>whatever</b>	<b>s</b> 305:10	344:20	334:15
331:21	243:15	<b>WIPP</b> 258:8	344:23	342:11
341:5	262:13	281:11	<b>workers</b>	343:22
<b>ways</b>	305:2	281:11	259:14	
237:24	308:24	281:13	<b>working</b>	
260:5	324:11	281:13	245:19	<hr/> X <hr/>
341:7	326:8	281:13	296:15	<b>X-rays</b>
<b>weapons</b>	348:3	282:25	297:4	283:19
256:2	<b>Where 's</b>	283:16	300:6	<hr/> Y <hr/>
273:14	235:19	316:4	300:8	<b>yellow</b>
<b>website</b>	<b>wherever</b>	316:8	325:3	239:21
263:2	266:22	344:9	330:16	<b>yet</b> 267:14
<b>week</b> 238:2	<b>whether</b>	<b>woman</b>	<b>works</b>	281:12
238:3	230:23	329:15	232:20	285:18
281:18	267:25	<b>wonder</b>	<b>workshops</b>	292:3
294:18	270:12	323:24	301:25	294:2
295:21	273:24	323:25	303:11	318:15
295:21	296:8	<b>wonderful</b>	<b>world</b>	322:4
328:12	308:15		340:1	

340:2				
<b>young</b>				
334:17				
<b>yourself</b>				
333:18				
<b>Yucca</b>				
281:7				
283:3				
283:3				
283:4				
<hr/>				
Z				
<hr/>				
<b>Z-1</b> 304:8				
<b>Z-10</b>				
262:18				
<b>Z-1A</b>				
292:16				
297:24				
309:8				
<b>Z-8</b> 262:18				
<b>Z-9</b> 272:19				
287:24				
292:15				
292:16				
292:17				
303:5				
305:17				
309:9				
344:18				
344:21				
<b>zeros</b>				
307:7				
307:17				
<b>zillion</b>				
339:13				