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PUBLIC MEETING AND PUBLIC COMMENT PERIOD

SATURDAY, MAY 12, 2001

1:00 P.M.

VON KARMAN AUDITORIUM

NASA JET PROPULSION LABORATORY

4800 OAK GROVE DRIVE

PASADENA, CALIFORNIA

1 PASADENA, CALIFORNIA  
2 SATURDAY, MAY 12, 2001; 1:00 P.M.  
3  
4 MR. SAUNDERS: Good afternoon.  
5 Welcome to the Jet Propulsion Laboratory. Thank you  
6 for taking the time to attend this meeting on a  
7 Saturday afternoon.  
8 My name is Lee Saunders. I'm an  
9 environmental public affairs officer for the U.S.  
10 Navy and your facilitator for today's meeting about  
11 the proposed plan to select a remedy to clean up  
12 soils at the National Aeronautics and Space  
13 Administration Jet Propulsion Laboratory, located  
14 here in Pasadena.  
15 Prior to this meeting you had the  
16 opportunity speak to NASA, federal and other local  
17 regulatory agency representatives on a one-on-one  
18 basis about the proposed cleanup actions. During  
19 this portion of the meeting you, the community, can  
20 provide questions and comments to these  
21 representatives and their agencies on the proposed  
22 plan. These comments and questions will be included  
23 in a meeting transcript and become part of the final  
24 decision made for soil cleanup at JPL.  
25 Representing the agencies responsible

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1 I'm going to ask you to please hold  
2 your questions until the presentations have been  
3 completed. Once we've heard from all the presenters  
4 we will open the floor for questions and comments.  
5 You may want to use the sheets of paper that were  
6 distributed, comments sheets, to write down your  
7 questions during the presentation, in case you have  
8 some questions that you develop and you just feel  
9 you can't wait until the time comes, but that will  
10 help you keep track of what those questions are.  
11 To ensure that everyone that wishes to  
12 make a comment or ask a question has a fair and  
13 equal opportunity do so, we ask that you limit your  
14 comments or questions to two minutes. At the end of  
15 that time please take your seat. If you have not  
16 finished your remarks, you may continue for another  
17 three-minute period after we've heard from all the  
18 other speakers.  
19 We have a court reporter -- actually,  
20 we have two court reporters here today, so we ask  
21 you to please state your first and last name and  
22 spell your last name before you begin your comments  
23 or questions.  
24 If you do not wish to provide verbal  
25 comments or questions, you may also submit your

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1 for the cleanup and talking to you about the  
2 proposed plan and its remedial alternatives are  
3 agency representatives, who will each introduce  
4 themselves, starting from my left here.  
5 MR. ROBLES: Peter Robles from NASA.  
6 MR. ZUROMSKI: Richard Zuromski from  
7 the Naval Facilities Engineering Command.  
8 MR. GEBERT: Richard Gebert from the  
9 state of California Department of Toxic Substance  
10 Control.  
11 MR. RIPPERDA: Mark Ripperda from the  
12 U.S. EPA.  
13 MR. YOUNG: David Young from the  
14 Los Angeles Regional Water Quality Control Board.  
15 MR. SAUNDERS: And all these  
16 representatives are what we call remedial project  
17 managers that are responsible in one way or form in  
18 the cleanup of this particular site.  
19 Ground rules, I want to talk about  
20 ground rules for today's meeting, are as follows:  
21 This afternoon's format will consist of  
22 presentations by our representatives about the  
23 proposed plan and remedial alternatives, followed by  
24 a formal comment session where you, the community,  
25 can provide us with your comments and questions.

3

1 comments and questions in writing. There are  
2 comments sheets, as I just mentioned a moment ago,  
3 available on the tables in the back for those of you  
4 in the audience that would prefer not to give your  
5 input or comments verbally at this meeting.  
6 For those of you wondering why the  
7 U.S. Navy is involved with the environmental cleanup  
8 of a NASA facility, the explanation is fairly  
9 simple. In 1999 NASA and the Naval Facilities  
10 Engineering Command, who I work for, more commonly  
11 known by the acronym NAVFEC, reached a memorandum of  
12 agreement establishing roles and responsibilities  
13 that state that NASA may procure environmental  
14 engineering and consultancy services from NAVFEC and  
15 its subordinate commands. In late 1999 NAVFEC  
16 became heavily involved in providing environmental  
17 services to NASA JPL.  
18 Peter Robles, remedial project manager  
19 from NASA, is our first presenter.  
20 Peter?  
21 MR. ROBLES: Good afternoon. First  
22 thing we want to talk about is our presentation.  
23 What we have -- going to present this afternoon is a  
24 site description, regulatory framework, site  
25 assessment and investigative activities and our

5

1 remedial activity and proposed remediation  
2 alternatives. In other words, we're going to go and  
3 follow along what the booths in the back are, in  
4 sequence, so that you can get a feel for the total  
5 history of this site.

6 Site description. The site has been  
7 active since the late '30s to early '40s. It was  
8 part of a project out of Cal Tech. The Army  
9 ordinance took over the site in the '40s and became  
10 the owner of the site and work was done here for the  
11 Army ordinance service, particularly during the  
12 World War II era.

13 At that time during the '40s and '50s,  
14 the proper and acceptable way of disposing of  
15 chemicals was done through what we call seepage  
16 pits. Seepage pits are no more than bricks without  
17 the binding between them, so that things can seep  
18 out into the ground through them. At that time it  
19 was accepted. Most of that was working on  
20 propulsion systems to support jet aircraft, we call  
21 JATO, genesis to take-off rockets, also reverse  
22 engineering of V-II rockets for World War II and  
23 further on.

24 During the late '50s, early '60s the  
25 Army ordinance was working and negotiating with NASA

6

1 remediate.

2 Here is the site description of what  
3 we're talking about and here is the gist of the  
4 problem. Because of the seepage pits and the stuff  
5 that was put in there, they slowly, and it takes  
6 years to migrate through the soils and to reach the  
7 water table.

8 Our biggest concern is between 50 feet  
9 below the surface all the way down to 200 feet, and  
10 the main purpose of our discussion today is to talk  
11 about remediating what we call Operable Unit 2  
12 vadose zone. Vadose zone is an engineering term for  
13 just the soils between the surface to the water  
14 table.

15 We want to remove this source, so that  
16 it stops migrating and impacting the environment.  
17 And that's what our focus is today about, minimizing  
18 that, removing that and we have certain technologies  
19 that we have tried.

20 NASA will address the groundwater  
21 issue. In the future we plan another meeting like  
22 this next year, to talk about remediating  
23 groundwater Operable Unit 1 and 3, but today we want  
24 to focus on the soils.

25 And now I would like to turn this over

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1 and NASA took over the site in 1959, 1960, at which  
2 time what we did was we replaced the seepage pits  
3 with a sewer system so, therefore, we could stop  
4 that type of activity. Up until that time there was  
5 not a problem with the ground or soils in the area,  
6 but in '92 was when the concern came about and we  
7 were placed on the national priorities list by EPA.

8 And at that time that made us a  
9 Superfund site, which is what the process that we  
10 have been talking about these last couple of hours  
11 with you. That process started in October of '92,  
12 we signed a federal facility agreement and the  
13 process started for us to investigate the site.

14 Current activities right now is that  
15 all of our operations meet federal and state and  
16 local regulations. And by the way, I was told by  
17 our people to say this, that almost all, very small  
18 percentile is ever sent through disposal. We  
19 recycle and destroy as much as we can. The effect  
20 is, this facility is the best in NASA for recycling  
21 materials and chemicals that are used here. And we  
22 do a lot of research here but we meet all federal,  
23 state and local requirements so current operations  
24 is not a concern. We're talking about past  
25 acceptable practices that we are trying to

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1 to our regulatory framework speaker, which is ...  
2 MR. RIPPERDA: Thanks, Peter.  
3 I'm Mark Ripperda from EPA and I'm  
4 kind of speaking for all the regulators, for Richard  
5 and David who are here from the state of  
6 California.

7 But first I would just like to ask  
8 that all of you from the public go home, tell your  
9 friends -- tell 10 friends each how fun this is, how  
10 much you learned and tell them that they have to  
11 come back on Monday night.

12 So what does it mean to be a Superfund  
13 site and, for that matter, what's Superfund.  
14 Congress, about 20 years ago, passed a law that put  
15 a tax on the chemical industry, and that money from  
16 the chemical industry all went into a trust fund  
17 that's called the Superfund, that EPA is authorized  
18 to use to spend to clean up abandoned hazardous  
19 waste sites. That same law also gave EPA the  
20 authority to go after existing facilities, such as  
21 NASA JPL, that have had releases that need to be  
22 cleaned up.

23 But before you become a Superfund site  
24 you have to go through a ranking process. EPA  
25 evaluates how bad the site is, how bad the potential

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1 risk might be and, if you score high enough, you're  
2 put on the national priorities list, which that  
3 means you're a Superfund site. And right now  
4 there's about 2000 or so Superfund sites.  
5 So after the discovery of the release,  
6 and for NASA JPL that meant that the city of  
7 Pasadena found chemicals in their drinking water  
8 wells -- I'm not sure which way is east or west  
9 here -- over this way, right across the arroyo, the  
10 city of Pasadena has some drinking water wells, and  
11 they found levels of chemicals in there that were  
12 high enough that they needed to be -- to put a  
13 treatment system on them. At that time all that  
14 information -- started at EPA, we rank it and we say  
15 okay, this needs to be a Superfund site.  
16 But the first thing that happened is,  
17 that as soon as the city of Pasadena found those  
18 chemicals they put treatment systems in, NASA had to  
19 reimburse the city for that, and then NASA needs to  
20 start looking at their site and say -- and determine  
21 where those chemicals came from, how much there  
22 might be and how best to clean it up so that the  
23 groundwater in the future is not getting either more  
24 contaminated -- and in fact we can start to clean up  
25 the groundwater itself.

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1 all those comments. They'll do a written response  
2 that gets sent out to the public, it gets sent to  
3 the regulators, state of California people and, you  
4 know, we at EPA review NASA's response and say  
5 either yeah, you did a good job responding or not.  
6 And if everybody agrees that, you  
7 know, this is the best way to go, then they'll do an  
8 actual legal document, called a record of decision,  
9 where they say this is what we're selecting to do  
10 and then, from there, they actually design the  
11 system. Right now they have a rough idea, you  
12 know -- if you've been talking to us back there, you  
13 know that they're planning to put in about five bore  
14 holes. And that's not set in stone, that's, you  
15 know, an estimation of what we think will be best.  
16 Actual -- after public comments are  
17 received and the record of decision is signed, then  
18 there are contractors who will do a more detailed  
19 study, and it will probably be about five bore  
20 holes, plus or minus a little bit, but they'll do  
21 the actual details of the design. And after the  
22 soils are cleaned up, there will still be long-term  
23 monitoring to make sure that the remedy actually  
24 worked.  
25 And all of this is separate than the

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1 So to do that, we do what's called a  
2 remedial investigation and feasibility study. That  
3 means we look through all the records, what kind of  
4 chemicals are used on-site, drill -- NASA drilled  
5 bore holes all over the site, they drilled  
6 monitoring wells that gets down to the groundwater  
7 both on site and off site, they sampled drinking  
8 water wells from all over the area to try to  
9 determine the extent of the problem and to design a  
10 way to best clean it up. And that brings us to  
11 about where we are now, for the vadose zone soil.  
12 So NASA JPL completed the  
13 investigation of the soil zone and they're making a  
14 proposed plan to you, to the public, saying that,  
15 you know, we think we understand the problem, we  
16 think we know the best way to clean it up and what  
17 do you think? Both what do you think of what we've  
18 done and what do you think of what we, NASA, not the  
19 EPA, is saying on how to clean it up.  
20 You know, so if you do have any -- not  
21 just questions, but if you have any comments on what  
22 they're proposing, you know, please make those  
23 either today or, after the meeting, in writing. You  
24 know, let NASA know what you think.  
25 At that point NASA needs to respond to

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1 groundwater system which, as Peter said, will be  
2 addressed in -- in six months to a year there will  
3 be another meeting, with another proposed plan on  
4 how NASA plans to clean up the groundwater.  
5 And -- kind of like I already said,  
6 the whole point of this is just to get the public  
7 involved. So please tell your friends to come, tell  
8 people you live near what's going on and, you know,  
9 give us any comments or concerns you might have.  
10 MR. ZUROMSKI: Tell them about the  
11 cookies.  
12 MR. RIPPERDA: And eat the tablefull  
13 of cookies.  
14 MR. ZUROMSKI: Thank you, Mark.  
15 I think I talked to some of you. My  
16 name is Richard Zuromski, with the Naval Facilities  
17 Engineering Command, and I'm here today to talk to  
18 you about the site assessment and investigation  
19 activities that have been done here at JPL and,  
20 also, what we're proposing as a remedy for JPL  
21 OU-2.  
22 First I'll start out with the remedial  
23 investigation. From 1994 through 1998 JPL conducted  
24 a remedial investigation in over nine sampling  
25 events, different sampling events. They looked at

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<p>1 45 soil vapor wells, 35 soil borings and three test  2 pits. Now, they also, at the end of that remedial  3 investigation, established 37 permanent monitoring  4 points for soil vapor, that we monitor on a  5 quarterly basis. So we are continuing to monitor  6 the extent of VOCs in the soil to date, on a  7 quarterly basis.</p> <p>8 The samples that we took during the  9 remedial investigation identify the extent to which  10 the chemicals were found in the soils. The results  11 showed that there were elevated levels of four  12 different chemicals in the soil vapor. These four  13 chemicals were carbon tetrachloride,  14 trichloroethene, Freon 113 and  15 1,2-dichloroethylene. These chemicals are chemicals  16 that are used as cleaning solvents when they used to  17 test the old rocket motors here, back -- as Peter  18 was saying, back in the '30s, '40s and '50s they  19 used to clean out the rocket motors with these  20 solvents, and that's how they came into the ground  21 here OU-2.</p> <p>22 Secondly, I want to talk to you today  23 about the OU-2 risk assessment. The human health  24 risk assessment found that there were no risks above  25 regulatory thresholds from exposure to humans to</p> <p style="text-align: right;">14</p>	<p>1 how can we remove the chemicals that are in the soil  2 that may potentially continue to migrate into the  3 groundwater, and that's what we're looking at  4 today.</p> <p>5 Now, this graphic shows the extent to  6 which VOCs at any level, whether that was a very,  7 very small level or a high level, were found at JPL  8 during the remedial investigation. Now, to date, I  9 don't know how many of you had a chance to look back  10 at our table back here, but the size of this area is  11 smaller to date. And so if you are interested,  12 please, take a look. But this was during the 1994  13 through the 1998 remedial investigation.</p> <p>14 The highest levels -- like I said,  15 this is the extent of all levels that we have -- we  16 found during our remedial investigation. However,  17 the highest levels that we found were here, in the  18 north central part of the site. That's where most  19 of the lab activities were taking place at the  20 time.</p> <p>21 Now, based on the results of what we  22 did in the soil investigation and the remedial  23 investigation, and also our continued quarterly  24 monitoring program for soil vapor, we have found  25 that, as I said, the VOC vapor plume has not</p> <p style="text-align: right;">16</p>
<p>1 soils or soil vapor. Now as Peter mentioned  2 earlier, the main reason is that these chemicals are  3 more than 50 feet below the ground surface, where we  4 are today. So it's really very, very unlikely that  5 any of you will come in contact with those  6 chemicals.</p> <p>7 However, also as Peter and Mark  8 mentioned, there is a risk that these chemicals will  9 continue to migrate, they've already migrated 50 to  10 200 feet down and will continue to migrate to the  11 groundwater, and that is the purpose of the remedy  12 that we're proposing here.</p> <p>13 Now, we are currently studying how  14 we're going to remove the VOCs from the groundwater  15 and, as mentioned earlier, that is going to be the  16 subject of another public meeting, almost exactly  17 like this, in the near future. However, in the  18 meantime, again to reiterate what Peter said, there  19 isn't a risk from the chemicals in the groundwater  20 because your water purveyors, or the individuals who  21 have to deliver the water to you, have to meet very  22 strict regulatory requirements.</p> <p>23 But today's -- the focus of today's  24 meeting is looking at how we're going to remove what  25 we're calling -- we're calling source removal, is</p> <p style="text-align: right;">15</p>	<p>1 migrated in soil vapor off the site. This is about  2 the limit, it's about 45 acres here on the site in  3 soil vapor. So it hasn't gotten any bigger than  4 this.</p> <p>5 And, again, I encourage you to take a  6 look, after the formal presentation, at some of the  7 other documents that we have in the back, which will  8 show you some of the more current conditions.</p> <p>9 Now, like I said, based on the  10 analysis of the remedial -- during the remedial  11 investigation, the remedial objective for OU-2 is to  12 prevent VOCs from migrating to the groundwater.  13 That's our objective here. To meet this objective,  14 we looked at several alternatives and these were  15 investigated, what is called -- what Mark called  16 earlier the feasibility study. Of these  17 alternatives, two were selected for a very detailed  18 evaluation, as mentioned in the proposed plan that  19 was sent out. Others were looked at and, for  20 example -- but just weren't found to be feasible.  21 For example, it would be very infeasible to try to  22 dig out soils underneath all the buildings here at  23 JPL that are more than -- that the soils are more  24 than 50 feet below the buildings here on site. So  25 we wanted to look at two alternatives that were --</p> <p style="text-align: right;">17</p>

1 in detail, that we wanted to make sure were viable  
2 alternatives for cleaning up the site.

3 The first is no further action. This  
4 is a default that is used to compare all other  
5 technologies to. It would involve maintaining our  
6 quarterly soil vapor monitoring program and any  
7 possible natural degradation of the chemicals in the  
8 soil -- in the soil vapors.

9 The second is soil vapor extraction  
10 with granular activated carbon treatment. Now, this  
11 technology would involve installing you to five soil  
12 vapor extraction wells and five extraction systems  
13 or treatment systems, and also continuing the  
14 ongoing quarterly soil vapor monitoring program here  
15 at JPL.

16 To help us evaluate the technologies  
17 and the alternatives, we conducted a pilot study of  
18 the soil vapor extraction technology at JPL,  
19 starting in 1998. Again, some of the results from  
20 our pilot study are available at the tables in the  
21 back. But what it showed, in over 14 months of  
22 operation, we removed over 200 pounds of these  
23 chemicals from the soil.

24 Now, it was so effective during our  
25 pilot study, that we have -- we do continue to

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1 released from the system. So, basically, all of the  
2 chemicals that are sucked from the ground through  
3 the system remain in the vapor treatment system and  
4 are permanently removed from the soil vapor.

5 So, based on our analysis, based on  
6 the remedial investigation, based on our soil vapor  
7 extraction pilot study, Alternative 1 was not chosen  
8 because it just doesn't prevent the migration of  
9 VOCs to the groundwater. Therefore, the proposed  
10 alternative for OU-2 is soil vapor extraction.

11 Soil vapor extraction will be used to  
12 reduce the source of the chemicals in the soil  
13 vapor, so that they do not migrate to groundwater.  
14 It would permanently remove them from the soil  
15 vapor, through the system.

16 VOC -- excuse me. Soil vapor  
17 extraction works very well for several reasons.  
18 First, number one, it permanently removes the VOCs  
19 from the soil vapor.

20 Number two, it works very well in the  
21 types of geology and soil that we have here at JPL,  
22 and that was shown during our pilot study.

23 Third, it protects the groundwater  
24 from further migration of these chemicals through  
25 the soils.

20

1 operate the pilot study to date, and it does  
2 continue to remove the chemicals from the soil vapor  
3 to date.

4 Now, this is a conceptual drawing of  
5 how soil vapor extraction works. Now, let me point  
6 out some of the details of this diagram. It is  
7 fairly simplified but it does give you a good  
8 picture of how soil vapor extraction works.

9 First, here, this is from -- these are  
10 the past seepage pits that were used back -- as  
11 Peter said, back in the '30s and '40s that released  
12 VOCs into the soil and soil vapor. These VOCs are  
13 basically -- it's like a vacuum. The soil vapor  
14 extraction system is like a vacuum that sucks these  
15 soil vapor, the chemicals, into this extraction  
16 well, right here, and extracts the vapors, in a  
17 gaseous phase, to the surface through this little  
18 pump. The pump then sends the chemicals into the  
19 vapor treatment system.

20 Now, the vapor treatment system  
21 consists of granulated activated carbon. What it  
22 does, it's -- actually, it is like charcoal. What  
23 it does is, when the vapors, with the chemicals, go  
24 through the carbon, they bind to the carbon and they  
25 stay permanently in the carbon and clean air is

19

1 Fourth, the treatment period is  
2 relatively short, probably from one to five years,  
3 operating these types of systems.

4 And, finally, because of these  
5 advantages and because soil vapor extraction has  
6 been so successful not only here in our pilot study  
7 but at sites all over the country, it's given the  
8 name "a presumptive remedy" by the United States  
9 Environmental Protection Agency. What a presumptive  
10 remedy is, it's the most effective technology for  
11 conditions similar to JPL as was seen at sites  
12 tested throughout the country. And that's another  
13 main reason why we're proposing soil vapor  
14 extraction for OU-2.

15 Based on the pilot study data, based  
16 on the results of the remedial investigation and  
17 ongoing quarterly monitoring, we are proposing soil  
18 vapor extraction as the proposed alternative for JPL  
19 OU-2.

20 Lee?

21 MR. SAUNDERS: Thank you, Richard.

22 We're now going to go into the comment  
23 phase, comment and question phase of this meeting.  
24 As a quick reminder, to ensure that all  
25 participants' comments or questions are received --

21

1 receive equal treatment, please limit your comments  
2 and questions to two minutes. We also ask you to  
3 please state your first and last name and spell your  
4 last name for the court reporters.  
5 Thank you.  
6 Do we have any speakers that would  
7 like to comment or ask any questions? Please step  
8 up to the mike.  
9 Don't be shy.  
10 Any questions or comments that you  
11 want to submit to the court reporters in writing?  
12 Yes, ma'am. Would you step up to the  
13 mike, please.  
14 MS. TUTT: My name is Elaine Suzanne  
15 Tutt and my last name is T- as in Thomas -u-t-t as  
16 in Tom, and I'm a resident of Altadena, and I also  
17 work here at JPL.  
18 Yeah. What I would like to ask is for  
19 the alternatives, there's alternative one and  
20 alternative two, and it seems like alternative one  
21 is not really an alternative but it's just  
22 continuing not to do something. If I'm wrong about  
23 that I'd like to be corrected. And so alternative  
24 two is to pursue the soil vapor extraction.  
25 And it -- it's interesting. I

22

1 appreciate the description that was given today. I  
2 wonder if some folks from either the Navy or maybe  
3 someone -- the fellow from the EPA could tell us  
4 more about some other alternatives that were  
5 considered for this.  
6 Also, my other comment is, that I just  
7 received the notice, an invitation to this meeting,  
8 today, May 12, and the meeting -- I just received it  
9 in the mail today, May 12, from the post office in  
10 mail box here in Altadena, and today -- the meeting  
11 is also May 12. So I'd like to comment that this is  
12 not soon enough before the meeting to be able to get  
13 people over here and tell people about what an  
14 interesting meeting this is.  
15 I think that if we would have known  
16 about it a little more in advance, it would have  
17 helped.  
18 MR. SAUNDERS: 30 seconds.  
19 THE FLOOR: Thank you.  
20 It would have helped to get more  
21 interested community members out to the meeting. So  
22 I just wanted to just pass that along. I would  
23 think that at least 10 days would be the minimum  
24 that you would let us know in advance of the  
25 meeting.

23

1 Thank you.  
2 MR. RIPPERDA: I'll say something from  
3 EPA's perspective on your question on alternatives.  
4 And I also -- I agree with you about the short  
5 notice. That's inexcusable on our part, on NASA's  
6 part. I'm not sure why it happened that way, it  
7 wasn't supposed to. These things were supposed to  
8 be mailed out more than 10 days ago. So we screwed  
9 up, and I have to take responsibility for that, too,  
10 because I'm supposed to be overseeing what NASA's  
11 doing to make sure they do it right.  
12 But back to the alternatives.  
13 It does look like, you know, NASA is  
14 not giving anybody very much choice. They're giving  
15 you alternative one and alternative two, and  
16 alternative one is essentially do nothing. But in  
17 a -- we talked about this, actually, before the  
18 meeting, saying, "Wow, you know, we're not giving  
19 people much choice here." But it's what Richard  
20 said about a presumptive remedy.  
21 In a case like this, soil vapor  
22 extraction has been used at thousands of sites  
23 around the country. It's been the one and only  
24 technology that's proven to work consistently at  
25 sites like this.

24

1 You know, there's other things you can  
2 do. You can dig up the whole site, but EPA doesn't  
3 require a facility to investigate obviously  
4 ridiculous choices, such as digging up the entire  
5 site.  
6 But there's other things that you can  
7 do, like injecting steam to make it be cleaned up  
8 faster. That would be called innovative  
9 technology. But we don't really require that a  
10 facility look at things like that, that would cost  
11 so much more, when an off-the-shelf technology works  
12 so well and relatively quickly.  
13 So even though it looks like there's  
14 not really much choice here, it's because NASA is  
15 following the process that's set in law by Congress  
16 that they're supposed to look at alternatives, but  
17 we've been doing this long enough that the  
18 alternatives boil down to, in some cases, some very  
19 few or, in this case, only one real alternative.  
20 Congress makes us look at no further  
21 action just as a baseline, to make sure we're not  
22 out there spending money willy-nilly. And other  
23 than that, the way the law is written by Congress,  
24 we're supposed to look at viable alternatives.  
25 And in this case, we have enough

25

1 experience to know that soil vapor extraction is  
2 actually the only viable alternative. But we're  
3 still supposed to do it in this way when we go to  
4 public with our various alternatives that NASA is  
5 proposing.

6 We haven't changed the process, even  
7 though we've learned enough to know that there  
8 actually is only one real alternative here.

9 So I don't know if NASA wants to say  
10 anything.

11 MR. ROBLES: Just because it's SVE now  
12 doesn't mean that if, in the future, new technology  
13 comes in that we find better that we won't revisit  
14 this. This is not like cast in stone right now.

15 So I want to assure the public that as  
16 technologies develop, we are required through the  
17 process to periodically review what we're doing and,  
18 if we see some thing better, and if an issue comes  
19 up that we want to augment the SVE with another  
20 technology that has appeared to be better, that's  
21 what we do.

22 So as the technology improves, one of  
23 the things -- I've been in this business for 30  
24 years. One of the things that amazes me is the  
25 regulations are always set forth before the

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1 do review what we've done and, again, see if we're  
2 doing the right thing.

3 And, secondly, as I think was  
4 mentioned today, this is the proposed alternative,  
5 as well. The opportunity here is that we are  
6 presenting, though limited, but what we think is the  
7 best tentative, we do encourage your comments as to  
8 what you think if this is the best alternative. And  
9 that's why this part of the process involves public  
10 comment.

11 So thank you.

12 MR. SAUNDERS: Any other comments?

13 And just a couple of comments I wanted  
14 to make was, we did mail these out on Tuesday,  
15 May 8. Obviously, it wasn't enough time, so we'll  
16 definitely make sure that we mail these farther in  
17 advance, to get out to you in plenty of time to plan  
18 to attend the meeting.

19 And one other comment, as Richard is  
20 basically saying, is the purpose of this meeting is  
21 you can come here and provide some alternatives that  
22 you feel might be useful to add into the record,  
23 that we can consider in the future.

24 Are there any other comments or  
25 questions from the public?

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1 technology catches up. But as technology improves,  
2 we in the environment community can say, "Okay,  
3 look, this new technology might be better been SVE,  
4 so let's replace or let's augment."

5 So don't think that this is it. We're  
6 only going to do SVE and that's it, we've lost the  
7 opportunity. We're required through the process,  
8 and Mark is always on my case about this, is to make  
9 sure that the technology matches what we need to  
10 do. And so we're going to revisit this. This is  
11 not cast in stone.

12 We have meetings quarterly and we will  
13 discuss this, and we will have information meetings  
14 in the future because we still need your inputs. So  
15 as we go on, hopefully we'll find some technology  
16 with the silver bullet that will clean everything  
17 up. We hope. Some day. But until now we have to  
18 use what we've got.

19 MR. ZUROMSKI: I just want to make two  
20 quick comments just to clarify what Peter said, as  
21 well.

22 It's true that every five years we do  
23 what is called a five-year review once we sign the  
24 legal document that Mark talked about called the  
25 ROD, the record of decision. So every five years we

27

1 Yes.

2 MS. BLAIR: My name is Susan Blair,  
3 B-l-a-i-r. I'm also an Altadena resident. Mine's a  
4 curiosity question. Once the gases come up through  
5 the pipe into the chamber where the carbon is and it  
6 absorbs the chemical, what happens to those  
7 carbons?

8 MR. ZUROMSKI: What happens is, once  
9 the carbon becomes full of all the different  
10 chemicals that we are pulling from the soil vapors,  
11 we have to, as Peter stated earlier, in accordance  
12 with all the state, local and federal regulatory  
13 requirements, take that carbon canister, remove it,  
14 and then it's either recycled or incinerated or  
15 somehow disposed of in a very legal manner  
16 off-site. And then we then replace the carbon with  
17 brand new carbon and it continues the process  
18 again.

19 MS. BLAIR: Thank you.

20 MR. SAUNDERS: Do we have any other  
21 comments or questions from the public?

22 Yes, ma'am.

23 MS. COMPTON: Cynthia Compton,  
24 C-o-m-p-t-o-n. I'm an employee of JPL and  
25 interested community member. I have a few

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1 questions, so I'll just plow through them in my two  
2 minutes.

3 You said that in the '50s to the  
4 early '60s a sewer system replaced the seepage  
5 pits. Does that mean the chemicals are now going  
6 into the sewer system, and where do they go from  
7 there?

8 Other questions I have are: Is there  
9 a record of what other alternatives were considered  
10 other than these one and two, and where can we read  
11 or find out about that?

12 And it says the pilot system has  
13 removed 200 pounds of VOCs. Out of how many is  
14 predicted or known to be at the site?

15 It says the -- I think the -- what I'm  
16 hearing is that the VOCs are in the vapor or the  
17 pockets of the soil. So what about the soil itself,  
18 and all the VOCs in the soil particles, and, you  
19 know, once you remove it from the vapors does it now  
20 migrate from the soil particles back into the vapors  
21 afterwards?

22 And I also agree with the short notice  
23 to the public, and that's why there, in my opinion,  
24 are not adequate representation from the community  
25 here. I got the e-mail notice on Wednesday and

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1 I don't know if you've seen around the  
2 lab these circles with the ducks on it because  
3 they're saying this is a storm water drain, this is  
4 sanitary sewer. We don't want chemicals going down  
5 there. That's part of our regulation. We have a  
6 whole office on-site to manage that. So that's not  
7 going down there. That's one of the reasons.

8 The second -- well, I'll answer your  
9 last item on the notices. There is repositories in  
10 the local area, the libraries, that you can get  
11 these documents, and there is on the record of when  
12 we sent the notice. And we apologize. We had a  
13 little SNAFU. But we had sent 4,732 mailers.

14 Now, I have received some phone calls  
15 that people did receive them by Monday and Tuesday  
16 of this week, but there was a slight mix-up where  
17 you might have been the ones that didn't get it  
18 until later. We did send the e-mail out -- I don't  
19 know what happened. Well, we want to send it  
20 earlier, so that's a good comment. We're going to  
21 have to notice -- I think we're going to have to  
22 send them more than 10 days earlier, to make sure  
23 that the mail -- because there was some problems  
24 with some of the post offices in sending this stuff  
25 out, so we want to make sure it does.

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1 didn't really see it until Friday, about 6 p.m. on  
2 Friday. And I would like to know: Is there some  
3 kind of record of when notices are sent out to the  
4 public and where they're at.

5 And the other thing is, I think I was  
6 talking to Richard about who these notices are sent  
7 to in a half a mile radius from the site. What  
8 about -- I understand sending it another half a mile  
9 to get more public is maybe too many -- you know,  
10 too costly, but what about sending the notice to the  
11 customers --

12 MR. SAUNDERS: Time.

13 MS. COMPTON: -- of the water  
14 companies that are involved?

15 MR. SAUNDERS: Thank you.

16 Quite a few questions, and we'll try  
17 to address those one at a time.

18 MR. ROBLES: Good questions.

19 On the first one is, we do not send  
20 chemicals down the sewer system. What happens is we  
21 try to recycle them. They're usually used up in the  
22 processes. If we can't recycle them, we try to  
23 destroy them in some form of fashion. The  
24 regulations try to minimize sending stuff down the  
25 sanitary sewer. We're very particular about that.

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1 We also put it in the paper. We put  
2 it in the four local papers and L.A. Times. But I  
3 also notice that some people didn't see that, so we  
4 might have to augment in the future. So we have to  
5 be creative about which way -- do you guys listen to  
6 radio? Or -- might that be a better way? I'm just  
7 asking. Because we're trying to get more items out,  
8 and that's why we have two meetings.

9 So if you could tell the public. You  
10 know, I apologize. Come out Monday. I would love  
11 to see 100 people here, or more. But we have sent  
12 4,732 of mailers, plus the 6,000 JPLers who were  
13 contacted.

14 Okay?

15 MR. ZUROMSKI: I think I'm going to  
16 address the other two of them. I think Peter  
17 covered lot of yours.

18 The first is, if you do want to see  
19 the other types of technologies that were evaluated,  
20 that is in the feasibility study and that is  
21 available at all of the document repositories. And  
22 that shows you the detailed analysis, like I talked  
23 to you about earlier, that we go through to evaluate  
24 the technologies. And it will show when certain  
25 things were dropped out and when certain things were

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1 retained. And it is very detailed, it is about  
2 three -- three inches, four inches thick, but it is  
3 very easy to look at. So feel free, it's at all the  
4 document repositories.

5 The second question I think I'm going  
6 to answer is, the amount of chemicals that are in  
7 the soil vapor and how they move around.

8 There are different ways to --  
9 technically, to estimate how much is in the soil  
10 vapor. I can't get into every little detail of how  
11 that is done. Again, that is in the feasibility  
12 study as well. But there is an estimate of  
13 somewhere between three to five thousand pounds,  
14 5,000 being the maximum that we believe could be in  
15 the soil vapors, and that also includes what would  
16 be in the soils.

17 When we say "soil vapors," since they  
18 are volatile organic compounds they tend to be in a  
19 vapor state, and so that is why we are removing soil  
20 vapors by soils themselves.

21 Anybody?

22 MR. RIPPERDA: I'll add a little bit  
23 to that. That's actually a great question about  
24 soil vapor versus soil, and what Richard said is  
25 right, but I'm just going to add a little bit.

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1 vapor," that doesn't mean we're only looking at the  
2 vapor. What we really care about is what's in the  
3 soil and about any rainwater that might migrate  
4 through that soil, deabsorb it, and carry it down to  
5 groundwater.

6 MR. SAUNDERS: Any other feedback from  
7 our representatives?

8 MR. ROBLES: Did we answer all your  
9 questions, ma'am.

10 THE FLOOR: What about when you remove  
11 the VOCs from the vapors, as more  
12 chemicals evaporate out of the soil into the --

13 MR. ROBLES: Right. That's why you  
14 constantly do that. The question is -- there was  
15 one question that she had asked, once you remove the  
16 particles through the vapor, are there any particles  
17 left on the soil.

18 This is a continuous process because  
19 you want it to volatilize that material because it's  
20 a volatile organic. So you want to draw it out. So  
21 you constantly are pulling pressure and putting a  
22 vacuum on it to suck it up. Eventually there should  
23 be no particles left there.

24 I'd say no, because any system cannot  
25 100 percent clean. You can't get the last molecule

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1 We estimate, or NASA estimates, that  
2 there's up to about 5,000 pounds total of these  
3 things, and that's total in the soils, absorbed in  
4 the soils and in the soil vapor.

5 When it's located like it is, 50 to  
6 200 feet below the surface, you actually have to  
7 drill a well, a bore hole, to get down to it. And  
8 the act of drilling that bore hole and taking your  
9 sample, you can't -- it drives the VOCs out of that  
10 piece of soil. So you can't just take a sample of  
11 the soil and analyze how much is in the soil. It's  
12 just not very effective. So what we do instead is,  
13 we measure what's in the soil vapor. It's very  
14 easy. You drill your same bore hole, suck some air  
15 in, and that volatilizes it off the soil.

16 So we're being somewhat legalistic  
17 when we're always saying the VOCs in the soil vapor,  
18 because that's where we actually measured it, and  
19 that represents how much is actually in the soil.  
20 And there's various equations that you can use,  
21 based on the soil chemistry with partitioning  
22 coefficients and things like that, to calculate from  
23 what you have in the soil vapor back to what's in  
24 the soil.

25 So just because we always say "soil

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1 out. What you're trying to do is get as low as  
2 possible until the technology doesn't work anymore.  
3 And then you wait for another technology, where you  
4 say, "Hey, we're kind of finished, and there is no  
5 more threat to the groundwater." And that's what  
6 you do on it. It's not an exact science, we try our  
7 best, and that's what we do.

8 And that, like I said, the document,  
9 as Richard said, is thick. It has everything in  
10 there that you want to know. And if it's not in  
11 there, we'll have informative meetings and we can  
12 give you the boring lecture. Because this is --  
13 it's long. And to read these documents right now,  
14 at -- once we finish this process, sometime in the  
15 future, we're going to have so much documents that  
16 you will not believe. I mean, we generate so much  
17 information. This process requires of the  
18 government to do this, to make sure that we make the  
19 right decision. And we have to publish these  
20 documents so you, the public, can read them and say,  
21 "How did you guys make that choice?" That's what  
22 we call the administrative record, and that's why we  
23 have that in the repositories for you.

24 MR. SAUNDERS: I don't know if it was  
25 mentioned, in the proposed plan, the information

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1 repositories are located on, if you want that  
2 information, on page 6 of the proposed plan. That's  
3 the different information repositories.  
4 The item of record, I believe, is kept  
5 here? At JPL?  
6 MR. ROBLES: There's three.  
7 MR. SAUNDERS: Okay.  
8 And, again, what you're telling us  
9 tonight is very useful, this evening, because we  
10 need this feedback. I believe this is the first  
11 time that you've held a public meeting here, so this  
12 is a learning process for NASA, for all of us, and  
13 we appreciate this feedback that you're giving to  
14 us. It will help us make meetings better in the  
15 future, to communicate information to the public  
16 better.  
17 Yes, ma'am.  
18 MS. COMPTON: The only question that  
19 wasn't answered is have you considered sending these  
20 public notices to the customers of the water  
21 companies that are impacted.  
22 MR. ROBLES: Thank you.  
23 We have a representative here. I'm  
24 not going to put him on the spot.  
25 We meet with the Raymond Basin

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1 referring to is like when --  
2 MR. ROBLES: Oh, the customers? You  
3 mean the water customers?  
4 MS. COMPTON: You and me that are  
5 drinking the water and paying the purveyor to send  
6 water to our houses.  
7 MR. ROBLES: Oh, so you're asking  
8 should we send these to all the people that get the  
9 water.  
10 MS. COMPTON: All the customers who  
11 live within a half mile radius.  
12 MR. ROBLES: That's a good point.  
13 MR. SAUNDERS: I think, also, the  
14 point you may be making, and I may be wrong about  
15 this, but when utilities have public hearings and  
16 such, they usually include a public notice in their  
17 mail-out, in the billing. And, of course, that is  
18 their mailing, it's not ours. So we would have to  
19 approach a utility to do that. Whether they would  
20 do it for free or charge us, I don't know, but  
21 that's something we would have to discuss with the  
22 appropriate utility.  
23 MR. ROBLES: Right. That's a  
24 community right to know.  
25 That's a very good suggestion, that

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1 Management Board. We have dialogue. We are meeting  
2 with the city of Pasadena on Monday. The water  
3 purveyors know about these meetings, and we have  
4 told them in their board meetings and the word has  
5 gotten out that way. We have gone to local  
6 communities like, I think, Northeast Trees and a few  
7 others. We've told them about this.  
8 We are looking to expand our mailing  
9 list. So if you can recommend some groups or people  
10 that you want to put on the mailing list, please let  
11 us know. Because we have no fear of sending as many  
12 as it takes, so that the public -- normally ,  
13 believe it or not -- I've been in this business 30  
14 years, and I've only been at one public meeting  
15 where it was standing room only, and that was  
16 because there was -- the government needed to expand  
17 a bombing range. You know how controversial that  
18 was. But most of the time people get their  
19 information through the newsletter, or they call up,  
20 or they go to the repositories. But if you have any  
21 suggestions of people that you want on the mailing  
22 list or groups, please let us know. But this  
23 information has gotten out to the purveyors of  
24 water.  
25 MR. SAUNDERS: I believe what you're

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1 when we're going to talk about groundwater it might  
2 be a good thing is to go and talk to the purveyors  
3 and see if we should send those notice -- that's a  
4 good point. Thank you.  
5 MS. BLAIR: The Lincoln Avenue Water  
6 Company, every member of the Lincoln Avenue Water  
7 Company is shareholder, so they have the right to  
8 know that.  
9 MR. ROBLES: That's right. That's a  
10 good point. Thank you. I didn't think about that.  
11 That's good. Particularly when we're talking about  
12 groundwater. Good suggestion.  
13 MR. SAUNDERS: Right.  
14 Did we answer all your questions? Was  
15 there anything else that we skipped over?  
16 You had around six questions.  
17 MS. COMPTON: Record of public  
18 notices. Is that in the repositories or only here  
19 at JPL?  
20 MR. SAUNDERS: That type of  
21 information is put in the information repository.  
22 The public notice for the meeting would be put in  
23 there.  
24 Okay. Any other questions or comments  
25 from the public? We welcome this opportunity to

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1 hear from you. Anyone else?  
2 Well, there is another opportunity, if  
3 you think of further questions that you would like  
4 to ask. We are having another public meeting on  
5 Monday night, and that information is also in that  
6 proposed plan fact sheet, with times. And the  
7 public comment period is continuing on.  
8 Again, I want to thank you for  
9 attending. We encourage you to review and comment  
10 on the proposed plan. Final decision regarding  
11 cleanup will be made after your public comments have  
12 been received and considered.  
13 The public comment period started on  
14 May 7 and runs through June 11, 2001. If requested,  
15 NASA may consider extending the public comment  
16 period. Written comments and requests for  
17 extensions of the comment period should be mailed or  
18 e-mailed to Peter Robles, and his address is in the  
19 fact sheet and it's also up here on the slide here.  
20 If there's nothing else, no other  
21 comments, anything -- any last statements from our  
22 representatives up here, I thank you for attending  
23 this afternoon and have a good evening.  
24 Oh, yes. And there will continue to  
25 be -- the representatives here will be available

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4 CERTIFICATE  
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6  
7 I, LESLIE A. MAC NEIL, RPR, CSR  
8 No. 7187, in and for the State of California, do  
9 hereby certify:  
10 That the foregoing \_\_\_-page  
11 proceedings were taken down by me in shorthand at  
12 the time and place stated herein, and represent a  
13 true and correct transcript of the proceedings.  
14 I further certify that I am not  
15 interested in the event of the action.  
16 WITNESS my hand this \_\_\_\_ day of  
17 \_\_\_\_\_, 2001.  
18  
19  
20  
21 \_\_\_\_\_  
22 Certified shorthand  
23 reporter in and for the  
24 State of California  
25

1 after the meeting, if you want to do follow-ups or  
2 ask any further questions. And, again, if you think  
3 of a question after we've officially closed this  
4 meeting, feel free to write it out on a comment  
5 sheet and submit it to our court reporters and such  
6 so they can include it in the public record.  
7 Thank you.  
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<p><b>A</b></p> <p><b>abandoned</b> 9:18  <b>able</b> 23:12  <b>about</b> 2:10,18 3:1,19,22  5:22 7:6,10,24 8:3,11  8:17,22 9:14 10:4  11:11 12:13,19 13:10  13:18 14:23 17:1,2  22:22 23:4,13,16 24:4  24:17,20 27:8,24  30:11,17 31:1,6,8,10  31:25 33:5,23 34:1,23  35:2 36:2,3,10 39:3,7  40:14 41:1,10,11  <b>above</b> 14:24  <b>absorbed</b> 35:3  <b>absorbs</b> 29:6  <b>acceptable</b> 6:14 7:25  <b>accepted</b> 6:19  <b>accordance</b> 29:11  <b>acres</b> 17:2  <b>acronym</b> 5:11  <b>across</b> 10:9  <b>act</b> 35:8  <b>action</b> 18:3 25:21 44:15  <b>actions</b> 2:18  <b>activated</b> 18:10 19:21  <b>active</b> 6:7  <b>activities</b> 5:25 7:14  13:19 16:19  <b>activity</b> 6:1 7:4  <b>actual</b> 12:8,16,21  <b>actually</b> 4:19 12:10,23  19:22 24:17 26:2,8  34:23 35:6,18,19  <b>add</b> 28:22 34:22,25  <b>address</b> 8:20 31:17  33:16 42:18  <b>addressed</b> 13:2  <b>adequate</b> 30:24  <b>Administration</b> 2:13  <b>administrative</b> 37:22  <b>advance</b> 23:16,24  28:17  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PUBLIC MEETING AND PUBLIC COMMENT PERIOD  
SATURDAY, MAY 12, 2001  
1:00 P.M.

VON KARMAN AUDITORIUM  
NASA JET PROPULSION LABORATORY  
4800 OAK GROVE DRIVE  
PASADENA, CALIFORNIA

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PASADENA, CALIFORNIA

SATURDAY, MAY 12, 2001; 1:00 P.M.

MR. SAUNDERS: Good afternoon.

Welcome to the Jet Propulsion Laboratory. Thank you for taking the time to attend this meeting on a Saturday afternoon.

My name is Lee Saunders. I'm an environmental public affairs officer for the U.S. Navy and your facilitator for today's meeting about the proposed plan to select a remedy to clean up soils at the National Aeronautics and Space Administration Jet Propulsion Laboratory, located here in Pasadena.

Prior to this meeting you had the opportunity speak to NASA, federal and other local regulatory agency representatives on a one-on-one basis about the proposed cleanup actions. During this portion of the meeting you, the community, can provide questions and comments to these representatives and their agencies on the proposed plan. These comments and questions will be included in a meeting transcript and become part of the final decision made for soil cleanup at JPL.

Representing the agencies responsible

1 for the cleanup and talking to you about the  
2 proposed plan and its remedial alternatives are  
3 agency representatives, who will each introduce  
4 themselves, starting from my left here.

5 MR. ROBLES: Peter Robles from NASA.

6 MR. ZUROMSKI: Richard Zuromski from  
7 the Naval Facilities Engineering Command.

8 MR. GEBERT: Richard Gebert from the  
9 state of California Department of Toxic Substance  
10 Control.

11 MR. RIPPERDA: Mark Ripperda from the  
12 U.S. EPA.

13 MR. YOUNG: David Young from the  
14 Los Angeles Regional Water Quality Control Board.

15 MR. SAUNDERS: And all these  
16 representatives are what we call remedial project  
17 managers that are responsible in one way or form in  
18 the cleanup of this particular site.

19 Ground rules, I want to talk about  
20 ground rules for today's meeting, are as follows:  
21 This afternoon's format will consist of  
22 presentations by our representatives about the  
23 proposed plan and remedial alternatives, followed by  
24 a formal comment session where you, the community,  
25 can provide us with your comments and questions.

1 I'm going to ask you to please hold  
2 your questions until the presentations have been  
3 completed. Once we've heard from all the presenters  
4 we will open the floor for questions and comments.  
5 You may want to use the sheets of paper that were  
6 distributed, comments sheets, to write down your  
7 questions during the presentation, in case you have  
8 some questions that you develop and you just feel  
9 you can't wait until the time comes, but that will  
10 help you keep track of what those questions are.

11 To ensure that everyone that wishes to  
12 make a comment or ask a question has a fair and  
13 equal opportunity do so, we ask that you limit your  
14 comments or questions to two minutes. At the end of  
15 that time please take your seat. If you have not  
16 finished your remarks, you may continue for another  
17 three-minute period after we've heard from all the  
18 other speakers.

19 We have a court reporter -- actually,  
20 we have two court reporters here today, so we ask  
21 you to please state your first and last name and  
22 spell your last name before you begin your comments  
23 or questions.

24 If you do not wish to provide verbal  
25 comments or questions, you may also submit your

1 comments and questions in writing. There are  
2 comments sheets, as I just mentioned a moment ago,  
3 available on the tables in the back for those of you  
4 in the audience that would prefer not to give your  
5 input or comments verbally at this meeting.

6                   For those of you wondering why the  
7 U.S. Navy is involved with the environmental cleanup  
8 of a NASA facility, the explanation is fairly  
9 simple. In 1999 NASA and the Naval Facilities  
10 Engineering Command, who I work for, more commonly  
11 known by the acronym NAVFEC, reached a memorandum of  
12 agreement establishing roles and responsibilities  
13 that state that NASA may procure environmental  
14 engineering and consultancy services from NAVFEC and  
15 its subordinate commands. In late 1999 NAVFEC  
16 became heavily involved in providing environmental  
17 services to NASA JPL.

18                   Peter Robles, remedial project manager  
19 from NASA, is our first presenter.

20                   Peter?

21                   MR. ROBLES: Good afternoon. First  
22 thing we want to talk about is our presentation.  
23 What we have -- going to present this afternoon is a  
24 site description, regulatory framework, site  
25 assessment and investigative activities and our

1 remedial activity and proposed remediation  
2 alternatives. In other words, we're going to go and  
3 follow along what the booths in the back are, in  
4 sequence, so that you can get a feel for the total  
5 history of this site.

6                   Site description. The site has been  
7 active since the late '30s to early '40s. It was  
8 part of a project out of Cal Tech. The Army  
9 ordinance took over the site in the '40s and became  
10 the owner of the site and work was done here for the  
11 Army ordinance service, particularly during the  
12 World War II era.

13                   At that time during the '40s and '50s,  
14 the proper and acceptable way of disposing of  
15 chemicals was done through what we call seepage  
16 pits. Seepage pits are no more than bricks without  
17 the binding between them, so that things can seep  
18 out into the ground through them. At that time it  
19 was accepted. Most of that was working on  
20 propulsion systems to support jet aircraft, we call  
21 JATO, genesis to take-off rockets, also reverse  
22 engineering of V-II rockets for World War II and  
23 further on.

24                   During the late '50s, early '60s the  
25 Army ordinance was working and negotiating with NASA

1 and NASA took over the site in 1959, 1960, at which  
2 time what we did was we replaced the seepage pits  
3 with a sewer system so, therefore, we could stop  
4 that type of activity. Up until that time there was  
5 not a problem with the ground or soils in the area,  
6 but in '92 was when the concern came about and we  
7 were placed on the national priorities list by EPA.

8                   And at that time that made us a  
9 Superfund site, which is what the process that we  
10 have been talking about these last couple of hours  
11 with you. That process started in October of '92,  
12 we signed a federal facility agreement and the  
13 process started for us to investigate the site.

14                   Current activities right now is that  
15 all of our operations meet federal and state and  
16 local regulations. And by the way, I was told by  
17 our people to say this, that almost all, very small  
18 percentile is ever sent through disposal. We  
19 recycle and destroy as much as we can. The effect  
20 is, this facility is the best in NASA for recycling  
21 materials and chemicals that are used here. And we  
22 do a lot of research here but we meet all federal,  
23 state and local requirements so current operations  
24 is not a concern. We're talking about past  
25 acceptable practices that we are trying to

1 remediate.

2                   Here is the site description of what  
3 we're talking about and here is the gist of the  
4 problem. Because of the seepage pits and the stuff  
5 that was put in there, they slowly, and it takes  
6 years to migrate through the soils and to reach the  
7 water table.

8                   Our biggest concern is between 50 feet  
9 below the surface all the way down to 200 feet, and  
10 the main purpose of our discussion today is to talk  
11 about remediating what we call Operable Unit 2  
12 vadose zone. Vadose zone is an engineering term for  
13 just the soils between the surface to the water  
14 table.

15                   We want to remove this source, so that  
16 it stops migrating and impacting the environment.  
17 And that's what our focus is today about, minimizing  
18 that, removing that and we have certain technologies  
19 that we have tried.

20                   NASA will address the groundwater  
21 issue. In the future we plan another meeting like  
22 this next year, to talk about remediating  
23 groundwater Operable Unit 1 and 3, but today we want  
24 to focus on the soils.

25                   And now I would like to turn this over

1 to our regulatory framework speaker, which is ...

2 MR. RIPPERDA: Thanks, Peter.

3 I'm Mark Ripperda from EPA and I'm  
4 kind of speaking for all the regulators, for Richard  
5 and David who are here from the state of  
6 California.

7 But first I would just like to ask  
8 that all of you from the public go home, tell your  
9 friends -- tell 10 friends each how fun this is, how  
10 much you learned and tell them that they have to  
11 come back on Monday night.

12 So what does it mean to be a Superfund  
13 site and, for that matter, what's Superfund.  
14 Congress, about 20 years ago, passed a law that put  
15 a tax on the chemical industry, and that money from  
16 the chemical industry all went into a trust fund  
17 that's called the Superfund, that EPA is authorized  
18 to use to spend to clean up abandoned hazardous  
19 waste sites. That same law also gave EPA the  
20 authority to go after existing facilities, such as  
21 NASA JPL, that have had releases that need to be  
22 cleaned up.

23 But before you become a Superfund site  
24 you have to go through a ranking process. EPA  
25 evaluates how bad the site is, how bad the potential

1 risk might be and, if you score high enough, you're  
2 put on the national priorities list, which that  
3 means you're a Superfund site. And right now  
4 there's about 2000 or so Superfund sites.

5                   So after the discovery of the release,  
6 and for NASA JPL that meant that the city of  
7 Pasadena found chemicals in their drinking water  
8 wells -- I'm not sure which way is east or west  
9 here -- over this way, right across the arroyo, the  
10 city of Pasadena has some drinking water wells, and  
11 they found levels of chemicals in there that were  
12 high enough that they needed to be -- to put a  
13 treatment system on them. At that time all that  
14 information -- started at EPA, we rank it and we say  
15 okay, this needs to be a Superfund site.

16                   But the first thing that happened is,  
17 that as soon as the city of Pasadena found those  
18 chemicals they put treatment systems in, NASA had to  
19 reimburse the city for that, and then NASA needs to  
20 start looking at their site and say -- and determine  
21 where those chemicals came from, how much there  
22 might be and how best to clean it up so that the  
23 groundwater in the future is not getting either more  
24 contaminated -- and in fact we can start to clean up  
25 the groundwater itself.

10

1                   So to do that, we do what's called a  
2 remedial investigation and feasibility study. That  
3 means we look through all the records, what kind of  
4 chemicals are used on-site, drill -- NASA drilled  
5 bore holes all over the site, they drilled  
6 monitoring wells that gets down to the groundwater  
7 both on site and off site, they sampled drinking  
8 water wells from all over the area to try to  
9 determine the extent of the problem and to design a  
10 way to best clean it up. And that brings us to  
11 about where we are now, for the vadose zone soil.

12                   So NASA JPL completed the  
13 investigation of the soil zone and they're making a  
14 proposed plan to you, to the public, saying that,  
15 you know, we think we understand the problem, we  
16 think we know the best way to clean it up and what  
17 do you think? Both what do you think of what we've  
18 done and what do you think of what we, NASA, not the  
19 EPA, is saying on how to clean it up.

20                   You know, so if you do have any -- not  
21 just questions, but if you have any comments on what  
22 they're proposing, you know, please make those  
23 either today or, after the meeting, in writing. You  
24 know, let NASA know what you think.

25                   At that point NASA needs to respond to

1 all those comments. They'll do a written response  
2 that gets sent out to the public, it gets sent to  
3 the regulators, state of California people and, you  
4 know, we at EPA review NASA's response and say  
5 either yeah, you did a good job responding or not.

6           And if everybody agrees that, you  
7 know, this is the best way to go, then they'll do an  
8 actual legal document, called a record of decision,  
9 where they say this is what we're selecting to do  
10 and then, from there, they actually design the  
11 system. Right now they have a rough idea, you  
12 know -- if you've been talking to us back there, you  
13 know that they're planning to put in about five bore  
14 holes. And that's not set in stone, that's, you  
15 know, an estimation of what we think will be best.

16           Actual -- after public comments are  
17 received and the record of decision is signed, then  
18 there are contractors who will do a more detailed  
19 study, and it will probably be about five bore  
20 holes, plus or minus a little bit, but they'll do  
21 the actual details of the design. And after the  
22 soils are cleaned up, there will still be long-term  
23 monitoring to make sure that the remedy actually  
24 worked.

25           And all of this is separate than the

1 groundwater system which, as Peter said, will be  
2 addressed in -- in six months to a year there will  
3 be another meeting, with another proposed plan on  
4 how NASA plans to clean up the groundwater.

5                   And -- kind of like I already said,  
6 the whole point of this is just to get the public  
7 involved. So please tell your friends to come, tell  
8 people you live near what's going on and, you know,  
9 give us any comments or concerns you might have.

10                   MR. ZUROMSKI: Tell them about the  
11 cookies.

12                   MR. RIPPERDA: And eat the tablefull  
13 of cookies.

14                   MR. ZUROMSKI: Thank you, Mark.

15                   I think I talked to some of you. My  
16 name is Richard Zuromski, with the Naval Facilities  
17 Engineering Command, and I'm here today to talk to  
18 you about the site assessment and investigation  
19 activities that have been done here at JPL and,  
20 also, what we're proposing as a remedy for JPL  
21 OU-2.

22                   First I'll start out with the remedial  
23 investigation. From 1994 through 1998 JPL conducted  
24 a remedial investigation in over nine sampling  
25 events, different sampling events. They looked at

1 45 soil vapor wells, 35 soil borings and three test  
2 pits. Now, they also, at the end of that remedial  
3 investigation, established 37 permanent monitoring  
4 points for soil vapor, that we monitor on a  
5 quarterly basis. So we are continuing to monitor  
6 the extent of VOCs in the soil to date, on a  
7 quarterly basis.

8                   The samples that we took during the  
9 remedial investigation identify the extent to which  
10 the chemicals were found in the soils. The results  
11 showed that there were elevated levels of four  
12 different chemicals in the soil vapor. These four  
13 chemicals were carbon tetrachloride,  
14 trichloroethene, Freon 113 and  
15 1,2-dichloroethylene. These chemicals are chemicals  
16 that are used as cleaning solvents when they used to  
17 test the old rocket motors here, back -- as Peter  
18 was saying, back in the '30s, '40s and '50s they  
19 used to clean out the rocket motors with these  
20 solvents, and that's how they came into the ground  
21 here OU-2.

22                   Secondly, I want to talk to you today  
23 about the OU-2 risk assessment. The human health  
24 risk assessment found that there were no risks above  
25 regulatory thresholds from exposure to humans to

1 soils or soil vapor. Now as Peter mentioned  
2 earlier, the main reason is that these chemicals are  
3 more than 50 feet below the ground surface, where we  
4 are today. So it's really very, very unlikely that  
5 any of you will come in contact with those  
6 chemicals.

7                   However, also as Peter and Mark  
8 mentioned, there is a risk that these chemicals will  
9 continue to migrate, they've already migrated 50 to  
10 200 feet down and will continue to migrate to the  
11 groundwater, and that is the purpose of the remedy  
12 that we're proposing here.

13                   Now, we are currently studying how  
14 we're going to remove the VOCs from the groundwater  
15 and, as mentioned earlier, that is going to be the  
16 subject of another public meeting, almost exactly  
17 like this, in the near future. However, in the  
18 meantime, again to reiterate what Peter said, there  
19 isn't a risk from the chemicals in the groundwater  
20 because your water purveyors, or the individuals who  
21 have to deliver the water to you, have to meet very  
22 strict regulatory requirements.

23                   But today's -- the focus of today's  
24 meeting is looking at how we're going to remove what  
25 we're calling -- we're calling source removal, is

15

1 how can we remove the chemicals that are in the soil  
2 that may potentially continue to migrate into the  
3 groundwater, and that's what we're looking at  
4 today.

5 Now, this graphic shows the extent to  
6 which VOCs at any level, whether that was a very,  
7 very small level or a high level, were found at JPL  
8 during the remedial investigation. Now, to date, I  
9 don't know how many of you had a chance to look back  
10 at our table back here, but the size of this area is  
11 smaller to date. And so if you are interested,  
12 please, take a look. But this was during the 1994  
13 through the 1998 remedial investigation.

14 The highest levels -- like I said,  
15 this is the extent of all levels that we have -- we  
16 found during our remedial investigation. However,  
17 the highest levels that we found were here, in the  
18 north central part of the site. That's where most  
19 of the lab activities were taking place at the  
20 time.

21 Now, based on the results of what we  
22 did in the soil investigation and the remedial  
23 investigation, and also our continued quarterly  
24 monitoring program for soil vapor, we have found  
25 that, as I said, the VOC vapor plume has not

1 migrated in soil vapor off the site. This is about  
2 the limit, it's about 45 acres here on the site in  
3 soil vapor. So it hasn't gotten any bigger than  
4 this.

5                   And, again, I encourage you to take a  
6 look, after the formal presentation, at some of the  
7 other documents that we have in the back, which will  
8 show you some of the more current conditions.

9                   Now, like I said, based on the  
10 analysis of the remedial -- during the remedial  
11 investigation, the remedial objective for OU-2 is to  
12 prevent VOCs from migrating to the groundwater.  
13 That's our objective here. To meet this objective,  
14 we looked at several alternatives and these were  
15 investigated, what is called -- what Mark called  
16 earlier the feasibility study. Of these  
17 alternatives, two were selected for a very detailed  
18 evaluation, as mentioned in the proposed plan that  
19 was sent out. Others were looked at and, for  
20 example -- but just weren't found to be feasible.  
21 For example, it would be very infeasible to try to  
22 dig out soils underneath all the buildings here at  
23 JPL that are more than -- that the soils are more  
24 than 50 feet below the buildings here on site. So  
25 we wanted to look at two alternatives that were --

1 in detail, that we wanted to make sure were viable  
2 alternatives for cleaning up the site.

3           The first is no further action. This  
4 is a default that is used to compare all other  
5 technologies to. It would involve maintaining our  
6 quarterly soil vapor monitoring program and any  
7 possible natural degradation of the chemicals in the  
8 soil -- in the soil vapors.

9           The second is soil vapor extraction  
10 with granular activated carbon treatment. Now, this  
11 technology would involve installing you to five soil  
12 vapor extraction wells and five extraction systems  
13 or treatment systems, and also continuing the  
14 ongoing quarterly soil vapor monitoring program here  
15 at JPL.

16           To help us evaluate the technologies  
17 and the alternatives, we conducted a pilot study of  
18 the soil vapor extraction technology at JPL,  
19 starting in 1998. Again, some of the results from  
20 our pilot study are available at the tables in the  
21 back. But what it showed, in over 14 months of  
22 operation, we removed over 200 pounds of these  
23 chemicals from the soil.

24           Now, it was so effective during our  
25 pilot study, that we have -- we do continue to

1 operate the pilot study to date, and it does  
2 continue to remove the chemicals from the soil vapor  
3 to date.

4                   Now, this is a conceptual drawing of  
5 how soil vapor extraction works. Now, let me point  
6 out some of the details of this diagram. It is  
7 fairly simplified but it does give you a good  
8 picture of how soil vapor extraction works.

9                   First, here, this is from -- these are  
10 the past seepage pits that were used back -- as  
11 Peter said, back in the '30s and '40s that released  
12 VOCs into the soil and soil vapor. These VOCs are  
13 basically -- it's like a vacuum. The soil vapor  
14 extraction system is like a vacuum that sucks these  
15 soil vapor, the chemicals, into this extraction  
16 well, right here, and extracts the vapors, in a  
17 gaseous phase, to the surface through this little  
18 pump. The pump then sends the chemicals into the  
19 vapor treatment system.

20                   Now, the vapor treatment system  
21 consists of granulated activated carbon. What it  
22 does, it's -- actually, it is like charcoal. What  
23 it does is, when the vapors, with the chemicals, go  
24 through the carbon, they bind to the carbon and they  
25 stay permanently in the carbon and clean air is

1 released from the system. So, basically, all of the  
2 chemicals that are sucked from the ground through  
3 the system remain in the vapor treatment system and  
4 are permanently removed from the soil vapor.

5 So, based on our analysis, based on  
6 the remedial investigation, based on our soil vapor  
7 extraction pilot study, Alternative 1 was not chosen  
8 because it just doesn't prevent the migration of  
9 VOCs to the groundwater. Therefore, the proposed  
10 alternative for OU-2 is soil vapor extraction.

11 Soil vapor extraction will be used to  
12 reduce the source of the chemicals in the soil  
13 vapor, so that they do not migrate to groundwater.  
14 It would permanently remove them from the soil  
15 vapor, through the system.

16 VOC -- excuse me. Soil vapor  
17 extraction works very well for several reasons.  
18 First, number one, it permanently removes the VOCs  
19 from the soil vapor.

20 Number two, it works very well in the  
21 types of geology and soil that we have here at JPL,  
22 and that was shown during our pilot study.

23 Third, it protects the groundwater  
24 from further migration of these chemicals through  
25 the soils.

1 Fourth, the treatment period is  
2 relatively short, probably from one to five years,  
3 operating these types of systems.

4 And, finally, because of these  
5 advantages and because soil vapor extraction has  
6 been so successful not only here in our pilot study  
7 but at sites all over the country, it's given the  
8 name "a presumptive remedy" by the United States  
9 Environmental Protection Agency. What a presumptive  
10 remedy is, it's the most effective technology for  
11 conditions similar to JPL as was seen at sites  
12 tested throughout the country. And that's another  
13 main reason why we're proposing soil vapor  
14 extraction for OU-2.

15 Based on the pilot study data, based  
16 on the results of the remedial investigation and  
17 ongoing quarterly monitoring, we are proposing soil  
18 vapor extraction as the proposed alternative for JPL  
19 OU-2.

20 Lee?

21 MR. SAUNDERS: Thank you, Richard.

22 We're now going to go into the comment  
23 phase, comment and question phase of this meeting.  
24 As a quick reminder, to ensure that all  
25 participants' comments or questions are received --

1 receive equal treatment, please limit your comments  
2 and questions to two minutes. We also ask you to  
3 please state your first and last name and spell your  
4 last name for the court reporters.

5 Thank you.

6 Do we have any speakers that would  
7 like to comment or ask any questions? Please step  
8 up to the mike.

9 Don't be shy.

10 Any questions or comments that you  
11 want to submit to the court reporters in writing?

12 Yes, ma'am. Would you step up to the  
13 mike, please.

14 MS. TUTT: My name is Elaine Suzanne  
15 Tutt and my last name is T- as in Thomas -u-t-t as  
16 in Tom, and I'm a resident of Altadena, and I also  
17 work here at JPL.

18 Yeah. What I would like to ask is for  
19 the alternatives, there's alternative one and  
20 alternative two, and it seems like alternative one  
21 is not really an alternative but it's just  
22 continuing not to do something. If I'm wrong about  
23 that I'd like to be corrected. And so alternative  
24 two is to pursue the soil vapor extraction.

25 And it -- it's interesting. I

1 appreciate the description that was given today. I  
2 wonder if some folks from either the Navy or maybe  
3 someone -- the fellow from the EPA could tell us  
4 more about some other alternatives that were  
5 considered for this.

6           Also, my other comment is, that I just  
7 received the notice, an invitation to this meeting,  
8 today, May 12, and the meeting -- I just received it  
9 in the mail today, May 12, from the post office in  
10 mail box here in Altadena, and today -- the meeting  
11 is also May 12. So I'd like to comment that this is  
12 not soon enough before the meeting to be able to get  
13 people over here and tell people about what an  
14 interesting meeting this is.

15           I think that if we would have known  
16 about it a little more in advance, it would have  
17 helped.

18           MR. SAUNDERS: 30 seconds.

19           THE FLOOR: Thank you.

20           It would have helped to get more  
21 interested community members out to the meeting. So  
22 I just wanted to just pass that along. I would  
23 think that at least 10 days would be the minimum  
24 that you would let us know in advance of the  
25 meeting.

1 Thank you.

2 MR. RIPPERDA: I'll say something from  
3 EPA's perspective on your question on alternatives.  
4 And I also -- I agree with you about the short  
5 notice. That's inexcusable on our part, on NASA's  
6 part. I'm not sure why it happened that way, it  
7 wasn't supposed to. These things were supposed to  
8 be mailed out more than 10 days ago. So we screwed  
9 up, and I have to take responsibility for that, too,  
10 because I'm supposed to be overseeing what NASA's  
11 doing to make sure they do it right.

12 But back to the alternatives.

13 It does look like, you know, NASA is  
14 not giving anybody very much choice. They're giving  
15 you alternative one and alternative two, and  
16 alternative one is essentially do nothing. But in  
17 a -- we talked about this, actually, before the  
18 meeting, saying, "Wow, you know, we're not giving  
19 people much choice here." But it's what Richard  
20 said about a presumptive remedy.

21 In a case like this, soil vapor  
22 extraction has been used at thousands of sites  
23 around the country. It's been the one and only  
24 technology that's proven to work consistently at  
25 sites like this.

24

1                   You know, there's other things you can  
2 do. You can dig up the whole site, but EPA doesn't  
3 require a facility to investigate obviously  
4 ridiculous choices, such as digging up the entire  
5 site.

6                   But there's other things that you can  
7 do, like injecting steam to make it be cleaned up  
8 faster. That would be called innovative  
9 technology. But we don't really require that a  
10 facility look at things like that, that would cost  
11 so much more, when an off-the-shelf technology works  
12 so well and relatively quickly.

13                   So even though it looks like there's  
14 not really much choice here, it's because NASA is  
15 following the process that's set in law by Congress  
16 that they're supposed to look at alternatives, but  
17 we've been doing this long enough that the  
18 alternatives boil down to, in some cases, some very  
19 few or, in this case, only one real alternative.

20                   Congress makes us look at no further  
21 action just as a baseline, to make sure we're not  
22 out there spending money willy-nilly. And other  
23 than that, the way the law is written by Congress,  
24 we're supposed to look at viable alternatives.

25                   And in this case, we have enough

1 experience to know that soil vapor extraction is  
2 actually the only viable alternative. But we're  
3 still supposed to do it in this way when we go to  
4 public with our various alternatives that NASA is  
5 proposing.

6                   We haven't changed the process, even  
7 though we've learned enough to know that there  
8 actually is only one real alternative here.

9                   So I don't know if NASA wants to say  
10 anything.

11                   MR. ROBLES: Just because it's SVE now  
12 doesn't mean that if, in the future, new technology  
13 comes in that we find better that we won't revisit  
14 this. This is not like cast in stone right now.

15                   So I want to assure the public that as  
16 technologies develop, we are required through the  
17 process to periodically review what we're doing and,  
18 if we see some thing better, and if an issue comes  
19 up that we want to augment the SVE with another  
20 technology that has appeared to be better, that's  
21 what we do.

22                   So as the technology improves, one of  
23 the things -- I've been in this business for 30  
24 years. One of the things that amazes me is the  
25 regulations are always set forth before the

1 technology catches up. But as technology improves,  
2 we in the environment community can say, "Okay,  
3 look, this new technology might be better been SVE,  
4 so let's replace or let's augment."

5                   So don't think that this is it. We're  
6 only going to do SVE and that's it, we've lost the  
7 opportunity. We're required through the process,  
8 and Mark is always on my case about this, is to make  
9 sure that the technology matches what we need to  
10 do. And so we're going to revisit this. This is  
11 not cast in stone.

12                   We have meetings quarterly and we will  
13 discuss this, and we will have information meetings  
14 in the future because we still need your inputs. So  
15 as we go on, hopefully we'll find some technology  
16 with the silver bullet that will clean everything  
17 up. We hope. Some day. But until now we have to  
18 use what we've got.

19                   MR. ZUROMSKI: I just want to make two  
20 quick comments just to clarify what Peter said, as  
21 well.

22                   It's true that every five years we do  
23 what is called a five-year review once we sign the  
24 legal document that Mark talked about called the  
25 ROD, the record of decision. So every five years we

1 do review what we've done and, again, see if we're  
2 doing the right thing.

3                   And, secondly, as I think was  
4 mentioned today, this is the proposed alternative,  
5 as well. The opportunity here is that we are  
6 presenting, though limited, but what we think is the  
7 best tentative, we do encourage your comments as to  
8 what you think if this is the best alternative. And  
9 that's why this part of the process involves public  
10 comment.

11                   So thank you.

12                   MR. SAUNDERS: Any other comments?

13                   And just a couple of comments I wanted  
14 to make was, we did mail these out on Tuesday,  
15 May 8. Obviously, it wasn't enough time, so we'll  
16 definitely make sure that we mail these farther in  
17 advance, to get out to you in plenty of time to plan  
18 to attend the meeting.

19                   And one other comment, as Richard is  
20 basically saying, is the purpose of this meeting is  
21 you can come here and provide some alternatives that  
22 you feel might be useful to add into the record,  
23 that we can consider in the future.

24                   Are there any other comments or  
25 questions from the public?

1 Yes.

2 MS. BLAIR: My name is Susan Blair,  
3 B-l-a-i-r. I'm also an Altadena resident. Mine's a  
4 curiosity question. Once the gases come up through  
5 the pipe into the chamber where the carbon is and it  
6 absorbs the chemical, what happens to those  
7 carbons?

8 MR. ZUROMSKI: What happens is, once  
9 the carbon becomes full of all the different  
10 chemicals that we are pulling from the soil vapors,  
11 we have to, as Peter stated earlier, in accordance  
12 with all the state, local and federal regulatory  
13 requirements, take that carbon canister, remove it,  
14 and then it's either recycled or incinerated or  
15 somehow disposed of in a very legal manner  
16 off-site. And then we then replace the carbon with  
17 brand new carbon and it continues the process  
18 again.

19 MS. BLAIR: Thank you.

20 MR. SAUNDERS: Do we have any other  
21 comments or questions from the public?

22 Yes, ma'am.

23 MS. COMPTON: Cynthia Compton,  
24 C-o-m-p-t-o-n. I'm an employee of JPL and  
25 interested community member. I have a few

1 questions, so I'll just plow through them in my two  
2 minutes.

3                   You said that in the '50s to the  
4 early '60s a sewer system replaced the seepage  
5 pits. Does that mean the chemicals are now going  
6 into the sewer system, and where do they go from  
7 there?

8                   Other questions I have are: Is there  
9 a record of what other alternatives were considered  
10 other than these one and two, and where can we read  
11 or find out about that?

12                   And it says the pilot system has  
13 removed 200 pounds of VOCs. Out of how many is  
14 predicted or known to be at the site?

15                   It says the -- I think the -- what I'm  
16 hearing is that the VOCs are in the vapor or the  
17 pockets of the soil. So what about the soil itself,  
18 and all the VOCs in the soil particles, and, you  
19 know, once you remove it from the vapors does it now  
20 migrate from the soil particles back into the vapors  
21 afterwards?

22                   And I also agree with the short notice  
23 to the public, and that's why there, in my opinion,  
24 are not adequate representation from the community  
25 here. I got the e-mail notice on Wednesday and

1 didn't really see it until Friday, about 6 p.m. on  
2 Friday. And I would like to know: Is there some  
3 kind of record of when notices are sent out to the  
4 public and where they're at.

5                   And the other thing is, I think I was  
6 talking to Richard about who these notices are sent  
7 to in a half a mile radius from the site. What  
8 about -- I understand sending it another half a mile  
9 to get more public is maybe too many -- you know,  
10 too costly, but what about sending the notice to the  
11 customers --

12                   MR. SAUNDERS: Time.

13                   MS. COMPTON: -- of the water  
14 companies that are involved?

15                   MR. SAUNDERS: Thank you.

16                   Quite a few questions, and we'll try  
17 to address those one at a time.

18                   MR. ROBLES: Good questions.

19                   On the first one is, we do not send  
20 chemicals down the sewer system. What happens is we  
21 try to recycle them. They're usually used up in the  
22 processes. If we can't recycle them, we try to  
23 destroy them in some form of fashion. The  
24 regulations try to minimize sending stuff down the  
25 sanitary sewer. We're very particular about that.

1 I don't know if you've seen around the  
2 lab these circles with the ducks on it because  
3 they're saying this is a storm water drain, this is  
4 sanitary sewer. We don't want chemicals going down  
5 there. That's part of our regulation. We have a  
6 whole office on-site to manage that. So that's not  
7 going down there. That's one of the reasons.

8 The second -- well, I'll answer your  
9 last item on the notices. There is repositories in  
10 the local area, the libraries, that you can get  
11 these documents, and there is on the record of when  
12 we sent the notice. And we apologize. We had a  
13 little SNAFU. But we had sent 4,732 mailers.

14 Now, I have received some phone calls  
15 that people did receive them by Monday and Tuesday  
16 of this week, but there was a slight mix-up where  
17 you might have been the ones that didn't get it  
18 until later. We did send the e-mail out -- I don't  
19 know what happened. Well, we want to send it  
20 earlier, so that's a good comment. We're going to  
21 have to notice -- I think we're going to have to  
22 send them more than 10 days earlier, to make sure  
23 that the mail -- because there was some problems  
24 with some of the post offices in sending this stuff  
25 out, so we want to make sure it does.

1                   We also put it in the paper. We put  
2 it in the four local papers and L.A. Times. But I  
3 also notice that some people didn't see that, so we  
4 might have to augment in the future. So we have to  
5 be creative about which way -- do you guys listen to  
6 radio? Or -- might that be a better way? I'm just  
7 asking. Because we're trying to get more items out,  
8 and that's why we have two meetings.

9                   So if you could tell the public. You  
10 know, I apologize. Come out Monday. I would love  
11 to see 100 people here, or more. But we have sent  
12 4,732 of mailers, plus the 6,000 JPLers who were  
13 contacted.

14                   Okay?

15                   MR. ZUROMSKI: I think I'm going to  
16 address the other two of them. I think Peter  
17 covered lot of yours.

18                   The first is, if you do want to see  
19 the other types of technologies that were evaluated,  
20 that is in the feasibility study and that is  
21 available at all of the document repositories. And  
22 that shows you the detailed analysis, like I talked  
23 to you about earlier, that we go through to evaluate  
24 the technologies. And it will show when certain  
25 things were dropped out and when certain things were

1 retained. And it is very detailed, it is about  
2 three -- three inches, four inches thick, but it is  
3 very easy to look at. So feel free, it's at all the  
4 document repositories.

5                   The second question I think I'm going  
6 to answer is, the amount of chemicals that are in  
7 the soil vapor and how they move around.

8                   There are different ways to --  
9 technically, to estimate how much is in the soil  
10 vapor. I can't get into every little detail of how  
11 that is done. Again, that is in the feasibility  
12 study as well. But there is an estimate of  
13 somewhere between three to five thousand pounds,  
14 5,000 being the maximum that we believe could be in  
15 the soil vapors, and that also includes what would  
16 be in the soils.

17                   When we say "soil vapors," since they  
18 are volatile organic compounds they tend to be in a  
19 vapor state, and so that is why we are removing soil  
20 vapors by soils themselves.

21                   Anybody?

22                   MR. RIPPERDA: I'll add a little bit  
23 to that. That's actually a great question about  
24 soil vapor versus soil, and what Richard said is  
25 right, but I'm just going to add a little bit.

1                   We estimate, or NASA estimates, that  
2 there's up to about 5,000 pounds total of these  
3 things, and that's total in the soils, absorbed in  
4 the soils and in the soil vapor.

5                   When it's located like it is, 50 to  
6 200 feet below the surface, you actually have to  
7 drill a well, a bore hole, to get down to it. And  
8 the act of drilling that bore hole and taking your  
9 sample, you can't -- it drives the VOCs out of that  
10 piece of soil. So you can't just take a sample of  
11 the soil and analyze how much is in the soil. It's  
12 just not very effective. So what we do instead is,  
13 we measure what's in the soil vapor. It's very  
14 easy. You drill your same bore hole, suck some air  
15 in, and that volatilizes it off the soil.

16                   So we're being somewhat legalistic  
17 when we're always saying the VOCs in the soil vapor,  
18 because that's where we actually measured it, and  
19 that represents how much is actually in the soil.  
20 And there's various equations that you can use,  
21 based on the soil chemistry with partitioning  
22 coefficients and things like that, to calculate from  
23 what you have in the soil vapor back to what's in  
24 the soil.

25                   So just because we always say "soil

1 vapor," that doesn't mean we're only looking at the  
2 vapor. What we really care about is what's in the  
3 soil and about any rainwater that might migrate  
4 through that soil, deabsorb it, and carry it down to  
5 groundwater.

6 MR. SAUNDERS: Any other feedback from  
7 our representatives?

8 MR. ROBLES: Did we answer all your  
9 questions, ma'am.

10 THE FLOOR: What about when you remove  
11 the VOCs from the vapors, as more  
12 chemicals evaporate out of the soil into the --

13 MR. ROBLES: Right. That's why you  
14 constantly do that. The question is -- there was  
15 one question that she had asked, once you remove the  
16 particles through the vapor, are there any particles  
17 left on the soil.

18 This is a continuous process because  
19 you want it to volatilize that material because it's  
20 a volatile organic. So you want to draw it out. So  
21 you constantly are pulling pressure and putting a  
22 vacuum on it to suck it up. Eventually there should  
23 be no particles left there.

24 I'd say no, because any system cannot  
25 100 percent clean. You can't get the last molecule

1 out. What you're trying to do is get as low as  
2 possible until the technology doesn't work anymore.  
3 And then you wait for another technology, where you  
4 say, "Hey, we're kind of finished, and there is no  
5 more threat to the groundwater." And that's what  
6 you do on it. It's not an exact science, we try our  
7 best, and that's what we do.

8                   And that, like I said, the document,  
9 as Richard said, is thick. It has everything in  
10 there that you want to know. And if it's not in  
11 there, we'll have informative meetings and we can  
12 give you the boring lecture. Because this is --  
13 it's long. And to read these documents right now,  
14 at -- once we finish this process, sometime in the  
15 future, we're going to have so much documents that  
16 you will not believe. I mean, we generate so much  
17 information. This process requires of the  
18 government to do this, to make sure that we make the  
19 right decision. And we have to publish these  
20 documents so you, the public, can read them and say,  
21 "How did you guys make that choice?" That's what  
22 we call the administrative record, and that's why we  
23 have that in the repositories for you.

24                   MR. SAUNDERS: I don't know if it was  
25 mentioned, in the proposed plan, the information

1 repositories are located on, if you want that  
2 information, on page 6 of the proposed plan. That's  
3 the different information repositories.

4                   The item of record, I believe, is kept  
5 here? At JPL?

6                   MR. ROBLES: There's three.

7                   MR. SAUNDERS: Okay.

8                   And, again, what you're telling us  
9 tonight is very useful, this evening, because we  
10 need this feedback. I believe this is the first  
11 time that you've held a public meeting here, so this  
12 is a learning process for NASA, for all of us, and  
13 we appreciate this feedback that you're giving to  
14 us. It will help us make meetings better in the  
15 future, to communicate information to the public  
16 better.

17                   Yes, ma'am.

18                   MS. COMPTON: The only question that  
19 wasn't answered is have you considered sending these  
20 public notices to the customers of the water  
21 companies that are impacted.

22                   MR. ROBLES: Thank you.

23                   We have a representative here. I'm  
24 not going to put him on the spot.

25                   We meet with the Raymond Basin

1 Management Board. We have dialogue. We are meeting  
2 with the city of Pasadena on Monday. The water  
3 purveyors know about these meetings, and we have  
4 told them in their board meetings and the word has  
5 gotten out that way. We have gone to local  
6 communities like, I think, Northeast Trees and a few  
7 others. We've told them about this.

8                   We are looking to expand our mailing  
9 list. So if you can recommend some groups or people  
10 that you want to put on the mailing list, please let  
11 us know. Because we have no fear of sending as many  
12 as it takes, so that the public -- normally ,  
13 believe it or not -- I've been in this business 30  
14 years, and I've only been at one public meeting  
15 where it was standing room only, and that was  
16 because there was -- the government needed to expand  
17 a bombing range. You know how controversial that  
18 was. But most of the time people get their  
19 information through the newsletter, or they call up,  
20 or they go to the repositories. But if you have any  
21 suggestions of people that you want on the mailing  
22 list or groups, please let us know. But this  
23 information has gotten out to the purveyors of  
24 water.

25                   MR. SAUNDERS: I believe what you're

1 referring to is like when --

2 MR. ROBLES: Oh, the customers? You  
3 mean the water customers?

4 MS. COMPTON: You and me that are  
5 drinking the water and paying the purveyor to send  
6 water to our houses.

7 MR. ROBLES: Oh, so you're asking  
8 should we send these to all the people that get the  
9 water.

10 MS. COMPTON: All the customers who  
11 live within a half mile radius.

12 MR. ROBLES: That's a good point.

13 MR. SAUNDERS: I think, also, the  
14 point you may be making, and I may be wrong about  
15 this, but when utilities have public hearings and  
16 such, they usually include a public notice in their  
17 mail-out, in the billing. And, of course, that is  
18 their mailing, it's not ours. So we would have to  
19 approach a utility to do that. Whether they would  
20 do it for free or charge us, I don't know, but  
21 that's something we would have to discuss with the  
22 appropriate utility.

23 MR. ROBLES: Right. That's a  
24 community right to know.

25 That's a very good suggestion, that

1 when we're going to talk about groundwater it might  
2 be a good thing is to go and talk to the purveyors  
3 and see if we should send those notice -- that's a  
4 good point. Thank you.

5 MS. BLAIR: The Lincoln Avenue Water  
6 Company, every member of the Lincoln Avenue Water  
7 Company is shareholder, so they have the right to  
8 know that.

9 MR. ROBLES: That's right. That's a  
10 good point. Thank you. I didn't think about that.  
11 That's good. Particularly when we're talking about  
12 groundwater. Good suggestion.

13 MR. SAUNDERS: Right.

14 Did we answer all your questions? Was  
15 there anything else that we skipped over?

16 You had around six questions.

17 MS. COMPTON: Record of public  
18 notices. Is that in the repositories or only here  
19 at JPL?

20 MR. SAUNDERS: That type of  
21 information is put in the information repository.  
22 The public notice for the meeting would be put in  
23 there.

24 Okay. Any other questions or comments  
25 from the public? We welcome this opportunity to

1 hear from you. Anyone else?

2 Well, there is another opportunity, if  
3 you think of further questions that you would like  
4 to ask. We are having another public meeting on  
5 Monday night, and that information is also in that  
6 proposed plan fact sheet, with times. And the  
7 public comment period is continuing on.

8 Again, I want to thank you for  
9 attending. We encourage you to review and comment  
10 on the proposed plan. Final decision regarding  
11 cleanup will be made after your public comments have  
12 been received and considered.

13 The public comment period started on  
14 May 7 and runs through June 11, 2001. If requested,  
15 NASA may consider extending the public comment  
16 period. Written comments and requests for  
17 extensions of the comment period should be mailed or  
18 e-mailed to Peter Robles, and his address is in the  
19 fact sheet and it's also up here on the slide here.

20 If there's nothing else, no other  
21 comments, anything -- any last statements from our  
22 representatives up here, I thank you for attending  
23 this afternoon and have a good evening.

24 Oh, yes. And there will continue to  
25 be -- the representatives here will be available

1 after the meeting, if you want to do follow-ups or  
2 ask any further questions. And, again, if you think  
3 of a question after we've officially closed this  
4 meeting, feel free to write it out on a comment  
5 sheet and submit it to our court reporters and such  
6 so they can include it in the public record.

7 Thank you.

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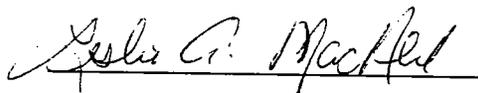
CERTIFICATE

I, LESLIE A. MAC NEIL, RPR, CSR  
No. 7187, in and for the State of California, do  
hereby certify:

That the foregoing 43-page  
proceedings were taken down by me in shorthand at  
the time and place stated herein, and represent a  
true and correct transcript of the proceedings.

I further certify that I am not  
interested in the event of the action.

WITNESS my hand this 25<sup>th</sup> day of  
May, 2001.



Certified shorthand  
reporter in and for the  
State of California