PUBLIC MEETING
IDAHO FALLS GRAND TETON MALL
COMMUNITY ROOM
IDAHO FALLS, IDAHO

JUNE 6, 1994
6:30 p.m.

MODERATOR

Nolan Jensen, Department of Energy

TEST AREA NORTH GROUNDWATER CONTAMINATION
OPERABLE UNIT 1-07B

Presenters:
Dan Harelson, DOE-Idaho
Greg Stromberg, EG&G

TRACK 1 INVESTIGATION AT TEST AREA NORTH
OPERABLE UNITS 1-01, 02, 06, 09

Presenters:
T.J. Meyer, EG&G Idaho

NANCY SCHWARTZ REPORTING
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Reported By:
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I N D E X

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IDAHO FALLS, MONDAY, JUNE 6, 1994

MR. JENSEN: Good evening, folks. I'd like to go ahead and get started. My name is Nolan Jensen, and I'll be the moderator tonight. I won't be presenting a whole lot, but we would like to welcome you to our public meeting tonight on a couple projects at Test Area North. And also we're in the middle of a comment period on these projects, and we have received several written comments already, and so we would like to thank those of you who have submitted those if you're here. I would just like to start with, perhaps, we do have an agenda, and we'll try to follow that, but we'll try to be fairly informal. And if you'll notice on the back, there is an evaluation form. As we go through this process, when we do public meetings and comment periods, et cetera, we try to improve those each time if we can, so if you have comments on things that would help you out better, let us know on the back of this form. There are a couple of reasons for

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our meetings, and I'll refer to this chart here. Basically there are two reasons. Number one, we would like to give you information, and second, we would like to hear your concerns and receive your comments. So, generally, it's a give and take situation here.

Tonight, as I mentioned, we're talking about two parts of this proposed plan. The first part is the Test Area North groundwater contamination. Then the second part will be several small scale investigations that we refer to as Track 1s, and I'll explain what that means a little bit later. I would like to give you a real brief update on the Environmental Restoration Program as a whole in general terms. There are copies of these – are they outside, Reuel? – as well, and also down in the Mall. This is a Citizens' Guide that was developed a couple of months ago, and it's just a general overview of the entire program, cleanup program. So if you would like to get more general information, you're welcome to pick up a copy of this.

Just as far as some things that are going on. Actually we're real pleased with our

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program. We signed the Federal Facility Agreement that controls our work about three years ago now, three and a half years ago with EPA and the State of Idaho. And in that time we have completed nine Records of Decision for cleanups. We have two more that are very close to Record of Decision, and then this one will be Number 12. So we're real pleased with that.

Also we have met 27 out of 27 enforceable milestones under that agreement. So, again, we're pleased with that. Also, in some cases we are accelerating the schedules in that agreement, and we have three waste area group comprehensive investigations that are about a year or two years ahead of schedule. So, again, we're real happy with that.

As far as things that are going on as far as cleanups, we just finished up the TRA Warm Waste Pond, which was an interim action. We also completed an ordnance interim action, cleaning up some of the ordnance and bombs, I guess, for lack of a better term, that were placed on the site by the Department of Defense several years ago. That one was completed. And then the TAN injection well interim action that

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we'll be talking about a little more tonight. That is on-going right now.

So there are a lot of things going on. The next things that will be coming up are – we have the CFA or Central Facilities Area Landfill investigation that will be coming out this fall or winter. We have another semiannual briefing, which is just a kind of a programmatic overview. That will be coming out this fall. So that just kind of gives you a general idea of where the program is. And I hope that helps a little bit.

We have a couple of subjects we're going to talk about tonight. And before I introduce the presenters, I'd like to cover a couple of things for you to just kind of hopefully give a little bit of a head start on where we're going. The INEL Federal Facility Agreement divided the INEL up into ten Waste Area Groups, and those essentially correspond to the different facilities out at the site.

Waste Area Group No. 1 is Test Area North, and that's what we're talking about tonight. Each of the Waste Area Groups is further divided down into Operable Units and

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those Operable Units which are these numbers here are further divided into the several sites. Tonight we'll be talking about the Test Area North groundwater investigation. And also that's closely tied to the injection well interim action which is already ongoing.

We'll also be talking about several preliminary investigations and those are several smaller scale investigations at several sites in other Operable Units, and we'll be talking about 31 of those sites

tonight very briefly.
(12) After we do all of these (13) investigations, at the end for each Waste Area (14) Group there is a comprehensive investigation (15) that ties it altogether and we call that the (16) Comprehensive Investigation. And that will be (17) coming up for Test Area North and it will start (18) in about a year from now. Those will be ongoing (19) for each of those Waste Area Groups. So (20) hopefully that will give you a little bit of a (21) feel how this fits together.
(22) One other thing that I would like (23) to talk about briefly, and for those of you who (24) were here last time, this will be a repeat. But (25) whenever we talk about the cleanup program at

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(1) INEL, and any cleanup under Superfund for that (2) matter, basically what we're doing is looking at (3) releases of contaminants or hazardous substances (4) and evaluating the risk that they pose, and so (5) the whole investigation comes down to a risk (6) assessment. And there are two parts of a risk (7) assessment that we talk about, or two different (8) aspects of risk.
(9) One is carcinogenic risk, or cancer (10) causing contaminants, and then noncarcinogenic (11) risk, or the other types of health effects. (12) Examples might be organ damage or birth defects. (13) Those sorts of things. So those are the two (14) general categories. And when we talk about risk (15) under each of those categories, we express them (16) in different ways.
(17) For carcinogenic or cancer causing (18) risk, EPA has established a risk range and as (19) long as you're within that or below that risk (20) range in this area, then the risk is deemed to (21) be acceptable and cleanup is probably not (22) required. If you're above that risk range, then (23) it is most likely required. The risk range that (24) was established is between one and 10,000 and (25) one in 1,000,000 chances of someone contracting

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(1) cancer above the national average for anyone who (2) might be exposed to that situation.
(3) Under the noncarcinogenic risk (4) there is a threshold established at one. And we (5) talked about, rather than a risk potential, we (6) talked about a hazard index which is a little (7) bit different. A hazard index of one or less, (8) basically says that we have a high degree of (9) certainty that whatever health effect is (10) associated with that contaminant will not happen (11) even for a sensitive population. So below one, (12) we're very certain that there is not going to be (13) a health effect.
(14) So, hopefully, that will just give (15) you a little bit of a heads-up on what we're (16) going to be talking about tonight and how these (17) investigations wind up, and they will be (18) referring to this chart throughout the evening (19) as we talk about the different projects.
(20) Before we begin the presentation, I (21) just have a couple of things logistic-wise to (22) cover. As I said, the meeting will be basically (23) in two parts tonight, and so what we'll do is (24) we'll have first the presentation on the Test (25) Area North groundwater. That will last 15 or 20

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(1) minutes. Then we'll have a question and answer (2) period that you can ask any question that you (3) want. And then after the question and answer (4) period, we'll have a formal comment period.
(5) And during that time you can (6) provide any comments orally that you would like. (7) And we have a court reporter here who will take (8) down those comments. And I'll kind of moderate (9) and help things along as we go.
(10) I believe that covers most of the (11) things that I wanted to cover. The last thing (12) that I want to do is introduce some of the (13) people that we have here tonight. First of all, (14) as we go into this investigation process, we do (15) that hand in hand with EPA and the State of (16) Idaho as signatories to our agreement.
(17) And I would like to introduce (18) Margie English tonight who is here from the (19) Idaho Department of Health and Welfare. Let her (20) give a statement and then Matt Wilkening from (21) the Environmental Protection Agency, Region 10 (22) out of Seattle. I'll just give them a minute (23) now.
(24) MS. ENGLISH: I'm the Waste Area (25) Group manager for the State working on the Test

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(1) Area North Project. And I also would like to (2) introduce a couple other members of our state (3) team that are here tonight. We have Jeff Fromm (4) who is a toxicologist who has helped evaluate (5) the sites from the risk aspect. We also have (6) Gary Winter who is a hydrogeolgist who has (7) helped us evaluate the groundwater aspects of (8) the sites. And on behalf of myself and my (9) colleagues, I would like to welcome you here (10) tonight. We're very glad that you came.
(11) The State really encourages the (12) public participation process. And I can see by (13) looking around the room here that many of you (14) who are here tonight were also here at our (15) meetings about a month and a half ago for the (16) NRF and RWMC projects, and we're very happy to (17) see your continuing interest in the INEL.
(18) The groundwater problem that you'll (19) hear about tonight is a complex one and it's one (20) that will not be easily solved. Over the past (21) couple of years we have worked with the DOE and (22) the EPA to evaluate this problem and to (23) formulate viable remedial alternatives. We (24) believe that the preferred alternative that (25) you'll hear about tonight is the best approach

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(1) to continue to address this problem.
(2) As Nolan said, the purpose of the (3) meeting tonight is to give you the data and (4) present to you the remedial alternatives, give (5) you a chance to ask questions and also to find (6) out what your opinions are on the remedial (7) strategy that we'll be proposing.
(8) The comments that you make, either (9) written or verbal, will then be used to help (10) formulate the final remedial decision for these (11) sites which will eventually be formalized in a (12) Record of Decision.
(13) So with that, I'd like to, once (14) again, thank you for coming and encourage you to (15) ask any questions, and also, please don't (16) hesitate to offer any comments on the sites (17) tonight. Thank you.
(18) MR. WILKENING: Matt Wilkening with (19) the EPA, a brand new project manager on this (20) site that I just took over from the previous (21) project manager about a week ago. Again,

we're (22) glad that you're here and putting in comments on (23) the site. We do appreciate any comments that (24) are given by the public on our proposal. We've (25) worked closely with the State and the Department

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(1) of Energy in drawing up this proposal and do (2) feel that it gives the best of possible proposals (3) that are out there that we've chosen for this. (4) So we'll let you continue on with the meeting.

(5) MR. JENSEN: Thank you. Before we (6) get started, I would just like to mention there (7) will be a presentation and then a question and (8) answer period after. We would like to keep it (9) fairly informal, so if you have a quick (10) clarification question during the presentation (11) go ahead and stop them and ask that. If they (12) are more lengthy, you might want to wait until (13) the end so we can get through it.

(14) I will now introduce Dan Harelson (15) who is the Department of Energy Project Manager (16) for Waste Area Group 1. And then I'll let Dan (17) introduce Greg.

(18) MR. HARELSON: I'm Dan Harelson. (19) I'm the Department of Energy WAG Manager for (20) Waste Area Group 1, which is the Test Area (21) North. As I'm sure most you have are aware, the (22) Idaho National Engineering Laboratory is a (23) Department of Energy site that's located about (24) 50 miles west of Idaho Falls. The entire site (25) covers about 890 square miles. Most of the

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(1) facilities are located here in the southern (2) portion of the site. The Test Area North, which (3) is the subject of tonight's meeting, is about (4) 28 miles north of these other facilities.

(5) The Test Area North was originally (6) established to support research and development (7) on nuclear powered aircraft. This was done in (8) the 1950s and early 1960s. Following cancellation (9) of that program in the early 1960s, there were (10) several efforts involving research and development (11) on nuclear energy. There are four facilities at (12) the Test Area North.

(13) The Technical Support Facility as (14) the name implies is a support facility where (15) there are maintenance shops, vehicle shops, (16) offices. The guard gate is there. There is (17) a fire station there. There is also the (18) Three-mile Island core debris is being stored in (19) a pool there and there is the Hot Shop, which is (20) used to work on radioactive equipment.

(21) Other facilities include the (22) Initial Engine Test Facility, which was the test (23) area for these nuclear powered aircraft. It is (24) no longer in use. These are the same aircraft (25) engines that are on display down at the

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(1) Experimental Breeder Reactor 1. The (2) Loss-of-Fluid Test Facility and the Water (3) Reactor Research Test Facility were both used in (4) the research and development efforts on nuclear (5) energy.

(6) Currently, at the Loss-of-Fluid (7) Test Facility, the Army has a manufacturing (8) facility that manufactures advanced armor for (9) the M1-A1 tank. There are a couple of small (10) programs at the Water Reactor Research Test (11) Facility. One of them evaluates supercritical (12) water oxydation, which is a treatment process, (13) and there are also efforts going on for (14) developing a nuclear - not nuclear, just (15) explosive detection.

(16) This is an aerial view of the (17) Technical Support Facility from a little bit (18) different angle. The groundwater contamination (19) problem that we have at the Test Area North is (20) related to an injection well which is located (21) right about here (indicating). The injection (22) well is a 12-inch diameter pipe that went (23) directly to the aquifer, the Snake River Plain (24) Aquifer. It was used from about 1955 through (25) 1972 to dispose of pretty much all of the waste

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(1) water that was generated at the Test Area North. (2) That is everything from industrial and process (3) waste water to sanitary sewage effluent after (4) treatment.

(5) The most wide-spread contaminant (6) that we have at Test Area North is trichloroethene, (7) it is also called trichloroethylene or TCE. It (8) extends from the injection well about a mile and (9) a half and the plume is a half mile wide.

(10) This contamination was first (11) discovered in 1987 during routine drinking water (12) sampling. An air sparging system was installed (13) in the drinking water supply to keep contaminant (14) concentration below the federal drinking water (15) standard.

(16) In 1990 we performed sludge removal (17) and removed about 45 cubic feet of sludge from (18) the injection well itself. In early 1992 we (19) came out with public meetings for an interim (20) action and also to scope the Remedial (21) Investigation/Feasibility Study that is the (22) subject of tonight's meeting. The injection (23) well interim action began operation in about (24) mid-February of this year. We had originally (25) planned to operate that action at 50 gallons a

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(1) minute, pumping from the well at 50 gallons a (2) minute.

(3) We have run into a number of (4) surprises that has kept that pumping rate at a (5) lower level, but we have been removing (6) significant amounts of contamination. We have (7) been operating in a batch mode. That is, we (8) have been removing about 10,000 gallons at a (9) time and treating that and discharging it. And (10) to date we have removed about 3,000 pounds of (11) organic contaminants.

(12) I will introduce Greg Stormberg (13) now. He is one of the principal investigators (14) on the Remedial Investigation/Feasibility Study. (15) He can provide some more information on what we (16) did for the Remedial Investigation/Feasibility (17) Study. The range of alternatives we evaluated. (18) And then when he is finished, I will come back (19) and try to describe the alternatives as (20) presented in the proposed plan and explain why (21) we prefer the alternative that we prefer. So (22) with that I'll introduce Greg Stormberg.

(23) MR. STORMBERG: Good evening. What (24) I would like to do today is basically give you (25) two short descriptions of two areas of

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(1) Remedial Investigation/Feasibility Study.

(2) First, I'd like to present the (3) findings of the Remedial Investigation, that's (4) the characterization phase of the project, and (5) then present the

types and the range of (6) technologies that we evaluated and how we (7) refined that list of technologies to get to the (8) preferred alternative.
(9) Now, with respect to the Remedial (10) Investigation, there are two basic objectives of (11) the Remedial Investigation. One was to define (12) the nature and the extent of contamination or (13) the types of contamination that we have in the (14) injection well and the groundwater and, also, (15) what is its distribution? What are the (16) distributions of those contaminants?
(17) Then secondly, we'll take that (18) information and evaluate the risks posed by (19) those groundwater contaminants. In order to (20) define the nature and extent of the contamination, (21) a number of groundwater monitoring wells were (22) drilled. They are symbolized by these black (23) dots here on this board that you see. And we (24) also conducted several rounds of groundwater (25) sampling and analysis, and what we found from

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(1) the Remedial Investigation as well as from past (2) investigations in 1989 and 1990, was that we (3) have basically seven contaminants that we're (4) concerned about.
(5) These include both volatile (6) organics and radionuclides. The volatile (7) organics, as Dan has already mentioned, TCE is (8) the most widely distributed, but it also (9) includes dicholoroethene or DCE and (10) tetrachloroethene or PCE.
(11) The radionuclides that we detected (12) included cesium-137, tritium, strontium-90 and (13) uranium-234. As Dan also indicated, we're (14) seeing some surprises as a result of the interim (15) action, things that we weren't aware of (16) initially. We've detected americium-241 during (17) one of the samplings into the injection well.
(18) And we've also seen another (19) volatile organic, dicholoropropane. So (20) basically, we have a fairly dynamic system. We (21) want to make sure that we keep an eye on these (22) as we continue the interim action and our (23) remedial action for this Operable Unit.
(24) But what we can say about the (25) horizontal or lateral distribution of these

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(1) contaminants is, as Dan indicated, TCE (2) represents the widest distributor, widest (3) migrated contaminant in the groundwater. It (4) extends from essentially the Technical Support (5) Facility a mile and a half down the groundwater (6) gradient to the Water Reactor Research Test (7) Facility and the plume is about a half mile (8) wide.
(9) All of the other contaminants that (10) we found in the groundwater are less widely (11) distributed and fit within this plume. In fact, (12) I think the next most widely distributed plume (13) is only about a half mile from the injection (14) well. So we'll use the TCE plume as our (15) baseline contaminant plume.
(16) A second very important point that (17) we needed to address with respect to TAN was: (18) What is the vertical extent of the contamination? (19) In the subsurface TAN, we're basically dealing (20) with basalt flows with sediments that have been (21) laid down in between those basalt flows. We (22) call those sedimentary interbeds. And there (23) were two points that we wanted to look at.
(24) We wanted to look at how continuous (25) this interbed is and what is it composed of, or

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(1) what does it consist of and how thick is the (2) contaminant plume? The effective aquifer (3) extends from about 200 feet below land surface (4) to well over 800 feet. So we have a 600 or 700 (5) foot effective aquifer at TAN, and we needed to (6) define the extent of contamination in that area.
(7) What we found as a result of the RI (8) was that this interbed here is composed of silt (9) and clays and some fine sand. It ranges in (10) thickness from about 15 to about 40 feet thick (11) and it is fairly continuous, at least as far as (12) we know it today.
(13) We also found from groundwater (14) quality data that contaminants in the Snake (15) River Plain Aquifer above this interbed exceed (16) drinking water standards. The groundwater below (17) this interbed, there are no contaminants that (18) exceed drinking water standards. These two (19) features are fairly important with respect to (20) the remediation of the TAN area for the reason (21) that the interbed acts as an barrier to the (22) migration of the contaminants from the upper (23) part of the aquifer to the lower part of the (24) aquifer.
(25) And secondly, with respect to

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(1) remediation, we're dealing with a much smaller (2) volume or potentially smaller volume of water (3) than if contamination had been distributed (4) across the entire effective thickness of this (5) aquifer. So those are two important features (6) that I want to point out. One other point I (7) need to bring out here is that with respect to (8) the injection well itself, disposal of waste to (9) the injection well ceased well over 20 years ago (10) and yet we still find the highest concentration (11) of contaminants in the immediate vicinity of (12) this well.
(13) This indicates at least one very (14) important thing and that there may be additional (15) or continued residual undissolved contaminants (16) in the vicinity of that injection well that are (17) continuing to provide input to the basalt flow (18) that we see further down gradient, so that's (19) important.
(20) Now with that information in hand, (21) the second step of the RI was to evaluate the (22) risks posed by those contaminants to human (23) health and the environment. And we looked at (24) three basically different scenarios. The first (25) was a current industrial use scenario where we

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(1) considered workers and visitors using water from (2) the production well. This is from about present (3) to the year 2040.
(4) And we looked at two future (5) residential use scenarios. One where water was (6) being used from the general groundwater plume, (7) and then the second future use scenario is water (8) being taken directly from the injection well (9) itself. For all three of these scenarios, we (10) evaluated several exposure pathways and how (11) those contaminants are taken into the body.
(12) The first was the inhalation of the (13) volatiles from volatile organics. And secondly, (14) we looked at the ingestion of that water, the (15) drinking of that groundwater. For the future (16) residents we also take a look at ingesting food (17) crops that had been

irrigated with the (18) contaminated water.
(19) What we found when we calculated (20) the various risks from those three scenarios was (21) that under the current industrial use scenario (22) where we're only using water from the production (23) wells that are currently operational, the total (24) cancer risk associated with that was one (25) additional incidence of cancer per one million

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(1) individuals. So we're below the acceptable (2) range as defined by EPA.
(3) That hazard index that was (4) calculated under that scenario was about .8. (5) That indicates that sensitive populations are (6) probably not going to be adversely affected by (7) exposure to those contaminants under the (8) scenario. For the future residential use (9) scenario where water can be pulled from anywhere (10) within the plume except the injection well, what (11) we found was that the total cancer risk was one (12) additional incident of cancer per 100,000 (13) individuals. That's within the acceptable risk (14) ranges by EPA. And that the calculated hazard (15) index was right about one, again, indicating (16) that adverse effects are probably unlikely to a (17) sensitive population.
(18) Now on the other hand, what we (19) found for the future resident in the use of the (20) water directly from the injection well, that (21) means if they can put a pump down there in the (22) future and pull the water and utilize it, we (23) found that the total cancer risk range from that (24) – or the total cancer risk was two additional (25) incidence of cancer per 1,000 people. So as you

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(1) can see – I'll use this little arrow here to (2) indicate it – we're above the acceptable range (3) defined by the EPA. So we have unacceptable (4) risk from the cancer causing constituents.
(5) With respect to the hazard index (6) and the noncarcinogens what we found was a (7) hazard index of about 23. That's a fairly high (8) hazard index and it's probable it would have (9) some adverse health effects associated with (10) consumption or use of that water.
(11) Knowing that we had unacceptable (12) risk from the use of the water from the (13) injection well, we went ahead and performed a (14) Feasibility Study. And there are three basic (15) stages to the Feasibility Study. First is to (16) identify the range of viable alternatives or (17) potentially viable alternatives for that site. (18) In this case we're dealing with groundwater.
(19) The second stage is to then screen (20) that full universe or range of alternatives (21) against the criteria that has been established (22) by the EPA. The reason that we do that is so we (23) can refine that list of technologies to get it (24) down to a handful of remedial alternatives that (25) are potentially applicable to the site in

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(1) question.
(2) What I would like to do is just (3) kind of run through examples of the range of (4) alternatives that we identified and the (5) screening criteria that we put them against. (6) There are six general categories that we call (7) general response actions. And with the (8) exception of the No Action alternative, the (9) other five have a number of technologies that (10) are potentially applicable.
(11) For example, institutional controls (12) might include an alternative water supply, (13) fencing, deed restrictions, things of that (14) nature. Containment technologies would include (15) things such as physical barriers, route (16) pertinence or hydraulic containment where we (17) siphon the water to keep it in place and prevent (18) future and further migration. The collection (19) and removal of contaminants, probably the most (20) widely used in the groundwater contamination (21) problems, includes the use of extraction wells (22) and injection wells where we pull water – (23) contaminated water out and treat it and then we (24) reinject it back into the aquifer.
(25) Above-ground treatment technologies.

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(1) These are really the process options. How we (2) treat the water that we pull out of the aquifer. (3) These might include things such as air stripping, (4) carbon adsorption, UV oxidation, ion exchange, (5) things of that nature. The treatment in place (6) technologies are generally associated with (7) remediation technologies in place or in situ (8) vitrification.
(9) Once we've identified that whole (10) list of technology you can tell that we can't do (11) a very detailed analysis on that whole range, (12) there are just too many alternatives. So we (13) apply the screening criteria as set down by the (14) EPA and these include things such as the (15) protection of human health. Does that (16) technology protect human health and the (17) environment? Does it comply with the federal (18) and state laws? Is it effective both in the (19) short term and the long term? How easy is it to (20) implement? What is its costs? Things of that (21) nature.
(22) Then we have a couple of other (23) criteria, the public and State acceptance, and (24) that is one of the reasons that we're here (25) tonight.

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(1) When we applied the screening (2) criteria to the list of potential groundwater (3) technologies we basically came up with four that (4) we considered viable for the TAN groundwater (5) contamination site, and Dan will talk about the (6) specifics of those alternatives as well as the (7) preferred alternative.
(8) MR. HARELSON: The proposed plan (9) presents four alternatives for remediation (10) action at the radioactive Test Area North. The (11) first alternative is No Action and the name (12) implies or suggests we wouldn't do anything to (13) remove contaminants or try to contain the spread (14) of contamination. As with all of the (15) alternatives, we would monitor the way (16) contamination changes over time.
(17) The second alternative that we (18) looked at was Limited Action using institutional (19) controls. Institutional controls limit access (20) to the water. They would prevent people from (21) being exposed to the contaminated water. This (22) could be done through either physical means such (23) as fences and signs.
(24) It could be done by putting a (25) supply well outside away from the contamination

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(1) plume, or it could be done through administrative (2) mechanisms like deed restrictions which would (3) say, if you're going to buy this land, you can't (4) put

a well in the contaminated plume. Its costs (5) are higher, there is a monitoring component and (6) then there are costs associated with those (7) controlling it.

(8) Alternatives 3 and 4 are very (9) similar. Alternative 3, which is our preferred (10) alternative includes three main components. The (11) first piece of it is continuation of this (12) interim action that we've spoken about. The (13) second piece is using an enhanced extraction (14) technology to try to remove that undissolved (15) secondary source material that we believe is in (16) the vicinity of the injection well. And the (17) third piece involves trying to remediate a (18) portion of the dissolved contaminant plume.

(19) We would continue the interim (20) action so that we would continue extracting (21) contamination from the groundwater while we are (22) designing and constructing this enhanced (23) remediation facility. Continuing the interim (24) action would also provide some measure of (25) hydraulic containment. It would pull the

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(1) contaminants back toward the well to some degree (2) and keep them from spreading as quickly.

(3) The enhanced removal technologies (4) that we are considering involve some steam (5) enhanced recovery contaminant or surfactant (6) enhanced recovery of contaminants. Surfactant (7) enhanced recovery involves, basically, the (8) injection of soapy water into the aquifer. The (9) soap helps to solubilize contamination so that (10) it moves towards the extraction well. It can (11) then be extracted, the contaminants removed and (12) then treated water would be reinjected at (13) federal drinking water standards or below (14) federal drinking water standards.

(15) The third piece of Alternative 3 (16) involves treating extracted, contaminated (17) groundwater and treating it from a fairly (18) small area of the dissolved contamination (19) plume. The wider area of contamination (20) outside of the small area would then be (21) addressed under both the WAG-wide RI/FS and (22) the INEL-wide RI/FS.

(23) The third piece would attempt to (24) remove all contaminated groundwater that is (25) contaminated above 5,000 parts per billion

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(1) trichloroethane and reduce that contaminated (2) level to five parts per billion, which is the (3) federal drinking water standard.

(4) Alternative 4 is identical to (5) Alternative 3 except we would try to treat a (6) much larger portion of this contaminant plume. (7) At least in theory, that approach would restore (8) the aquifer to meet federal drinking water (9) standards by 2040. And the reason 2040 was (10) picked was that's a reasonable estimate of the (11) time when the site will become available for (12) other non-DOE uses.

(13) Alternative 3 is our preferred (14) alternative even though it does not address the (15) whole contaminant plume. It focuses on the (16) source of contamination and in order to clean up (17) the wider dissolved area of contamination, it's (18) necessary, first, to deal with the source. By (19) focusing on the source, we believe that we're (20) directing our resources at the worst part of the (21) problem.

(22) By deferring the cleanup of the (23) this wider area of contamination to the WAG-wide (24) and the INEL-wide RI/FS, we're building (25) flexibility into the process so that we can

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(1) adapt our cleanup strategy as we learn more (2) about the problem, and in the long run save (3) money in the overall cleanup action.

(4) So with that I'll turn it back to (5) Nolan.

(6) MR. JENSEN: Thank you. We'll go (7) ahead and start our question and answer period. (8) You've been fairly quiet, so don't be shy. I (9) will try to keep it very informal. We do have a (10) court reporter here keeping minutes, so if you (11) wish to speak, speak right up so she can hear (12) you and we'll go ahead for 15 or 20 minutes and (13) then we'll conclude that and go into the formal (14) comment period.

(15) So, please, just questions now and (16) if you have comments, save them until when we (17) actually do the comment period so that we're (18) sure that we get those down accurately. So, any (19) questions?

(20) AUDIENCE MEMBER: This plume that (21) is stationery, is it kind of moving out slowly (22) to involve more and more of the aquifer?

(23) MR. HARELSON: It is moving, as you (24) said, slowly. The water table at Test Area (25) North is fairly - Greg probably knows the

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(1) average velocity better.

(2) AUDIENCE MEMBER: Did you calculate (3) how fast it might have - in other words, you're (4) calculating according to time; right?

(5) MR. STORMBERG: Time and (6) distribution of the contaminants, yes.

(7) AUDIENCE MEMBER: If you deal with (8) the wells first, by the time you can get to (9) anything that you find about the plume -

(10) MR. STORMBERG: The groundwater in (11) the vicinity of TAN, and if you look at (12) groundwater flow, let's equate that to the worst (13) or most widely distributed contaminant, which is (14) TCE, we're going to assume it flows with the (15) groundwater with no retardation at about .13 (16) meters per day, or about three feet per day.

(17) AUDIENCE MEMBER: How soon will it (18) get to Idaho Falls?

(19) MR. STORMBERG: Well, let's put it (20) this way, we didn't calculate that.

(21) AUDIENCE MEMBER: Why not? We live (22) here.

(23) MR. STORMBERG: I know you do. In (24) the 20 years since operations have ceased (25) disposing to the well, it's only a mile and a

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(1) half.

(2) AUDIENCE MEMBER: In 20 years?

(3) MR. STORMBERG: Yes.

(4) MR. HARELSON: Didn't we do some (5) modeling out?

(6) MR. STORMBERG: We did do modeling (7) out to the year 2094, so essentially 100 years, (8) and if I remember the distance is accurate, (9) we're only talking about an additional migration (10) of 10 miles, 10, 15 miles.

(11) AUDIENCE MEMBER: Technologies will (12) be more sophisticated as we go on.

(13) MR. STORMBERG: But it's not moving (14) very fast.

(15) MR. HARELSON: Well, in these

RI/FS (16) that I mentioned at the end, one of them starts (17) in about a year, the other one starts in 1999, (18) is that right? So, we're talking on the order (19) of five years rather then 100 years.
(20) AUDIENCE MEMBER: One more thing, (21) when you pulled out the stuff from the well and (22) you treated it or you removed it or you treated (23) it, you removed 3,000 pounds of sludge, you say?
(24) MR. HARELSON: We've removed about (25) 3,000 pounds of contamination since this interim

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(1) action started. The treatment process, there is (2) a pretreatment unit that uses ozone and that has (3) destroyed a significant fraction of that (4) contamination. Some of it has also been (5) captured on a carbon adsorption carbon unit that (6) is being recycled off site.
(7) AUDIENCE MEMBER: I just kind of (8) wondered if you ever had to take what you found (9) and stored it somewhere?
(10) MR. HARELSON: Well, the organic (11) contaminants – a significant portion was (12) destroyed by this treatment process, this (13) pretreatment process. The portion that was not (14) will be recycled at an EPA permitted off-site (15) facility.
(16) AUDIENCE MEMBER: Here in Idaho?
(17) MR. HARELSON: Not certain, but (18) possibly.
(19) AUDIENCE MEMBER: Where is it now?
(20) MR. HARELSON: It's in storage at (21) Test Area North.
(22) AUDIENCE MEMBER: Is any of the (23) water within this plume used on site right now (24) or were those examples purely hypothetical?
(25) MR. HARELSON: Yes, it is used on

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(1) the site. The two production wells that supply (2) drinking water to the Test Area North are (3) located up here right on the edge of the five (4) parts per billion plume. That water is treated (5) with this air sparging system. The only (6) contaminants that we're seeing in those (7) production wells are the organic contaminants, (8) we're not seeing any of the radionuclides.
(9) AUDIENCE MEMBER: The values that (10) you put up on the chart as far as risk levels, (11) were those average values, 95 percent values?
(12) MR. HARELSON: For drinking from (13) the plume, it is an average value, in aerially (14) weighted average concentration for the (15) approximate plume, so the concentration at any (16) given point in the plume was represented by an (17) aerially weighted average and that aerial (18) weighting was based on a computer model that was (19) performed.
(20) AUDIENCE MEMBER: So did you do an (21) uncertainty analysis?
(22) MR. STORMBERG: Yes, we did. I (23) can't give you the specifics. We did bring a (24) copy of the Remedial Investigation report and (25) we'll go into detail on that on the baseline

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(1) risk.
(2) AUDIENCE MEMBER: Do you know what (3) some of the bounds were on the lower?
(4) MR. STORMBERG: We can look it up (5) and find that answer for you.
(6) AUDIENCE MEMBER: The residential (7) scenario, was that an indoor and an outdoor (8) scenario for houses? I thought I saw houses.
(9) MR. HARELSON: I think that was (10) primarily for illustration. It looked at (11) inhalation and ingestion of the water. (12) Inhalation of vapors off the water, ingestion of (13) water and then ingestion of crops irrigated by (14) the water.
(15) AUDIENCE MEMBER: Inhalation (16) indoors?
(17) MR. HARELSON: By showering, I (18) think, was the primary mechanism.
(19) AUDIENCE MEMBER: Did you have (20) basement scenarios in those houses?
(21) MR. STORMBERG: No, we didn't have (22) basement scenarios since we're dealing with an (23) aquifer and we're pulling the contaminants up. (24) We have a 200 foot vadose zone where we haven't (25) detected; basement was not a scenario option or

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(1) a viable scenario at this time.
(2) AUDIENCE MEMBER: You haven't (3) detected any plumes outside?
(4) MR. STORMBERG: No, we didn't.
(5) AUDIENCE MEMBER: I would like a (6) clarification on your question you were asking (7) about the lower bound, what do you mean?
(8) MR. MEYER: Usually when you do a (9) risk analysis – just giving an average value (10) doesn't tell you too much about it. You really (11) need to know the upper and lower bounds of the (12) distribution of the risk value. Otherwise, you (13) don't know how uncertain it is. The reason I (14) talked about the basement is a lot of times if (15) you have a basement, we consider basements in (16) houses due to the pressure differential, it (17) takes the plume and sucks into the basement (18) gathering a higher concentration in basements.
(19) MR. STORMBERG: With respect to (20) that, as I mentioned, that vadose zone is so (21) thick that it's basalts and some sediments and (22) we haven't seen any vapor contaminants in the (23) vadose zone.
(24) AUDIENCE MEMBER: When you were (25) doing your population, you said sensitive

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(1) population, what particular sensitive population (2) were you looking at? Were you looking at little (3) children? Were you looking at adults?
(4) MR. JENSEN: You're talking about (5) just hazard index? This statement on here?
(6) AUDIENCE MEMBER: Right.
(7) MR. JENSEN: For sensitive (8) population.
(9) MR. STORMBERG: Well, the sensitive (10) population in the general term equates to the (11) young infants and children and the older people (12) who may be more susceptible to coming down to (13) organ damage as a typical default when you look (14) at that.
(15) MR. JENSEN: Those by the way, (16) those are established not as part of the risk (17) assessment, but those are established by EPA and (18) other guidance those indices for those (19) contaminants.
(20) MR. MEYER: Yes, I think, maybe, I (21) can address the question about bounding the (22) risk. I think – were you asking about the (23) probability of distribution of risk? Because (24) basically all Superfund risk assessment involves (25) using an average value for

contamination, then

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(1) using fixed percentiles for all of the other (2) exposure parameters and the uncertainty (3) analysis. The way it's usually done as more of (4) a qualitative analysis. Are you talking about (5) more of a probabilistic analysis like a Monte (6) Carlo?

(7) AUDIENCE MEMBER: Either one. In (8) other words, if you were going to use upper (9) bound values, even if they were to point the (10) estimates to provide a table, it would be (11) helpful to me.

(12) AUDIENCE MEMBER: Is there any sort (13) of cost risk chart that we could see?

(14) MR. HARELSON: Not so much cost (15) versus risk. I believe, this alternative, if I (16) remember right, the risk in the plume, the (17) average plume, with the source controlled, is (18) about one times ten to one minus five. By (19) spending the $21- to $26 million, we would (20) reduce that risk to about four times ten to the (21) minus six. By spending 58 to 96, we would get (22) down to two times ten to the minus six. That's (23) a rough number from calculations that I did. (24) So we're getting a great deal of risk reduction (25) for this amount of money and it declines the

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(1) amount of risk reduction that you get for (2) spending more on that.

(3) MR. STORMBERG: Reuel, do we have a (4) copy of the Feasibility Study here?

(5) MR. SMITH: I don't believe so.

(6) MR. STORMBERG: I can get one at (7) the break. There is one in my car, I think. (8) It's a time residual risk plot with the various (9) scenarios, so I'll go get that and make it (10) available.

(11) MR. JENSEN: Why don't we make it (12) available at the break, if anyone wants to see (13) it.

(14) AUDIENCE MEMBER: I just have one (15) more question. Did you consider any sort of (16) dermal absorption in the shower scenario as (17) exposure?

(18) MR. STORMBERG: No. Again, we just (19) didn't feel that the contact time would be (20) significant enough to warrant that as an (21) advisable exposure pathway.

(22) AUDIENCE MEMBER: Did you do any (23) sort of testing?

(24) MR. STORMBERG: No.

(25) MR. JENSEN: Any other questions?

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(1) Even if you don't have questions right now, Dan (2) and Greg will be around at the end, so if you (3) want to stick around and talk one on one, they (4) will be available.

(5) The way our agenda is set up, we'll (6) go directly into the comment period now, but we (7) could take a very short break if anybody wants (8) to before that. Does anybody need to take a (9) break? Okay. We'll go ahead and start right (10) into that. One more chance on the questions? (11) Any more questions?

(12) Before we start the comment period, (13) I just want to mention a couple of things. That (14) is, we're in the middle of the comment period (15) which lasts until June 17th. If you don't want (16) to give an oral comment tonight here with the (17) court reporter, at the back of the proposed plan (18) there is a comment sheet. It is postage paid (19) preaddressed, so you just need to fill it out (20) and send it in and we'll get it. You can do (21) that anytime until June 17th and we welcome (22) those.

(23) Since this is a more formal part of (24) the meeting and it is a comment period, I would (25) like to ask you to please stand up and state

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(1) your name if you have a comment. State your (2) name and then give your comment.

(3) Reuel, did we have anyone sign in (4) as a commenter?

(5) MR. SMITH: I'll go look.

(6) MR. JENSEN: We'll have those who (7) actually signed up first, and then we'll just (8) open it up for general comments. So no one (9) signed up to give a comment, so is there any one (10) who would like to stand and give a comment at (11) this time?

(12) MR. WHITE: C.E. White. I've read (13) this thing pretty thoroughly and we've had some (14) discussion one to one, too, here tonight and (15) previously. What you accomplish with remedial (16) alternative No. 3 would be the preferred one. (17) It certainly appears from anything that you can (18) come up with from the study, it would alleviate (19) any major problems. I can't see where there (20) would be worth spending all that additional (21) money to do four when you don't really (22) accomplish that much more out of it. (23) Your relationship between what's (24) accomplished against what is spent. The closer (25) you get to four from three, the more the ratio

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(1) changes and you get less for your money. Not (2) that money should be the total alternative or (3) total basis of the alternative, but with what (4) you get out of three, certainly seems to solve (5) the problem, unless, in the future it's (6) discovered that three is not doing what we (7) thought it was going to do. Let's put it that (8) way.

(9) One of your surprises was finding (10) some things which you didn't know were there. (11) Well, who knows, maybe in the future, although (12) you'll take care of those now, who knows in the (13) future if something else comes up in their (14) little head, and you have to reassess something. (15) But, to me, the Remedial No. 3 would be the way (16) to go, and it would be, I think, enough (17) protection to satisfy most anybody that I've (18) ever talked to about it.

(19) MR. JENSEN: All the comments that (20) are submitted tonight, there will be a formal (21) response to those, and the next step in the (22) process is to come out with a Record of (23) Decision, and that Record of Decision will (24) include a response in the summary with written (25) responses to your comments.

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(1) MR. WHITE: I would like to add (2) one more item to what I just said. We were (3) discussing the injection of other substances to (4) try to, let's say, loosen up some of the things (5) that are in that plume, the two were the steam (6) and the other so-called soapy alternative.

(7) Certainly the steam, if it works, (8) the way it works in the oil the fields, would be (9) a much cleaner type operation to go into rather (10) than injecting some other item into the ground (11) and then have to pull that out, soap or whatever (12) that they drove into this thing, so I'm assuming

(13) that in looking at these that the steam would be (14) looked at first, am I right?
(15) MR. HARELSON: Right now they are (16) being treated equally.
(17) MR. WHITE: Equally?
(18) MR. NOVAK: My name is Steve Novak. (19) And, I guess, I agree with Mr. White that the (20) Alternative No. 3 is probably the best for your (21) cost ratio, and groundwater is very difficult to (22) clean up. It's a difficult problem and cleaning (23) up the contaminated sediments and residuals, I (24) think, is your best alternative as opposed to (25) going after the entire plume.

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(1) MR. JENSEN: Okay. Thank you. (2) Anyone else? Again, even if you don't comment (3) now, remember, can you submit it in writing, so (4) it's not your last chance. Going once, thank (5) you. That will conclude this portion of our (6) meeting. We'll take about a ten-minute break (7) and then we'll come back.
(8) The second portion of the meeting (9) is much shorter, however, we'll talk about the (10) preliminary studies. So we'll go ahead and take (11) a ten-minute break and see you in about ten (12) minutes.
(13) (A recess was taken.)
(14) MR. JENSEN: If we can get you to (15) take a seat, please, we'll go ahead and get (16) started.
(17) The second part of this presentation (18) will go pretty quick tonight. I'll give you a (19) brief introduction to what the second part of (20) the meeting is about. When we signed the (21) Federal Facility Agreement, which controls our (22) whole cleanup program, there were about 400 (23) sites at the INEL that were identified as (24) potentially being contaminated and needing some (25) type of investigation.

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(1) Out of those 400 sites, some of (2) them like the TAN groundwater that we talked (3) about earlier, those were obviously problems and (4) we needed to deal with those. But in a lot of (5) cases a lot of those sites were identified based (6) on interviews with people. There might have (7) been a spill out there. We know there is an (8) underground tank that is going to be pulled, so (9) a lot of the sites we had little information (10) about and were much smaller scale problems.
(11) But we still needed to evaluate (12) them. So under our agreement we set up a (13) preliminary investigation process. And there (14) are two parts of that, and we refer to those (15) limited field investigations as Track 1s and (16) Track 2s. And basically what those are: A (17) Track 1 is just a very straight forward (18) evaluation based on, mostly, on existing data. (19) Once in a while we'll take a quick sample or (20) two, but in general we base that on existing (21) data and see if we can come up with a decision (22) based on that.
(23) The other is a Track 2, which is a (24) little bit more extensive, where we feel like we (25) actually need to go out and collect a little bit

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(1) of field data to do an evaluation. So in both (2) cases, out of those 400 sites, the majority of (3) those go through this process first. And as we (4) complete the Track 1 and Track 2 limited (5) investigations, there are a number of outcomes.
(6) First of all, if we find that the (7) contamination is not existent or very low and (8) the risk is low, then we observe where we can (9) come to a determination that we don't think (10) action is necessary. Or if it's something that (11) a cleanup is very obvious, like an oil spill or (12) something like that, we might do a removal (13) action and go out and clean up the dirt or (14) whatever.
(15) However, in some cases we find that (16) we need to do more investigation, and in that (17) case, we might bump that site into one of our (18) Remedial Investigation/Feasibility Studies, like (19) was done on the TAN groundwater.
(20) Tonight the investigations are all (21) at the Track 1 site. The ones that we're going (22) to be talking about were those that fell into (23) this category. So there has already been a (24) brief evaluation done and a preliminary (25) determination that no action is necessary. And

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(1) so tonight we're just formalizing that and (2) putting it out for public comment.
(3) I will now introduce T.J. Meyer who (4) works for EG&G, and he will be the presenter on (5) these sites. So, T.J., take it away.
(6) MR. MEYER: Good evening, my name (7) is T.J. Meyer. I'm project manager for EG&G for (8) Test Area North, and I will be discussing 31 (9) Track 1 investigations that were completed this (10) year and presenting the agency's recommendations (11) for those 31 sites.
(12) As Nolan said, Track 1 and Track 2 (13) processes use preexisting information or (14) information that can be obtained from the (15) facility through process knowledge or historical (16) records to try to evaluate the site to determine (17) what the next recommendation or what the next (18) decision should be for each of the sites.
(19) There are a total of 40 Track 1 (20) sites at TAN. We'll be talking about 31 of (21) them tonight. The other nine, we will not be (22) discussing. The preliminary Track 1 investigation (23) determined that there needs to be some more (24) investigation done at those particular sites.
(25) The 31 sites tonight consist of 18

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(1) either former or currently inactive underground (2) storage tanks. Most of these tanks have been (3) excavated and removed. The site has been (4) reestablished. I think there are three to four (5) sites that tanks were stored remaining in the (6) ground but they've been drained and any of the (7) product in them now, they basically have been (8) stabilized.
(9) Ten of the 31 sites consist of (10) potentially contaminated soil sites. And I say (11) the word "potentially" because in some cases the (12) sites were just large areas where equipment was (13) stored and it was unknown what the condition of (14) the site was. Some of them just looked like (15) disturbed sites and other cases, some of the (16) debris had been removed. That's why we use the (17) word "potentially." In three of the sites are (18) waste water disposal sites.
(19) Each of these sites has had a (20) Track 1 investigation done. And the Track 1 (21) process has been evolving over the past three (22) years and it consists of putting together a (23) document similar to this one here, and I

have (24) all 31 that we're going to be talking about (25) tonight, so if anybody has a question about any

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(1) of the ones that you read about in this plan, we (2) can actually pull out the Track 1 document and I (3) can show you and then you can go to the public (4) record and research it further if you would (5) like.

(6) The document basically has a series (7) of questions and tables in it where we go (8) through and we evaluate the site and we try to (9) compile all the historical knowledge, process (10) information, historical site use, photographs, (11) employee interviews to try and understand how (12) the site was used, what the site condition was, (13) what would have led to contamination at the site (14) to try to evaluate it historically, and in some (15) cases, or in all cases, we conducted a site (16) visit to evaluate the site, and in many cases we (17) actually collected some sampling to determine (18) what the current site condition was.

(19) With all that information, both the (20) historical and the current information about the (21) site that was compiled into a qualitative risk (22) assessment, then the whole package was presented (23) to the agencies for their review.

(24) The earlier discussion today talked (25) about the Test Area North facility. I'm going

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(1) to go over some of those major facilities again. (2) There is the LOFT, or the Loss-of-Fluid Test (3) Facility. The Initial Engine Test Facility, (4) which is located up here (indicating). The Test (5) Support Facility, which is the main facility at (6) TAN. And then the Water Reactor Research Test (7) Facility or WRRTF.

(8) Shown here in – well, it's a (9) magenta color or purpley color – are (10) underground storage tanks. Each of the (11) facilities have underground storage tanks. The (12) tanks were there for either vehicle refueling or (13) for emergency generator use or for boiler (14) operations for heating the building. Shown in (15) green are the soil contamination sites. Only (16) the Loss-of-Fluid Test Facility and the (17) Technical Support Facility have these potential (18) sites present.

(19) All of the waste water sites are (20) located at the Water Reactor Research Test (21) Facility. And all the water that was discharged (22) in these ponds was the processed water or (23) sanitary water from the facilities.

(24) Of the 40 Track 1 sites at TAN, 23 (25) sites were termed to have no contamination

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(1) present at them. Nine of the sites, as I (2) mentioned earlier, require additional (3) investigation and won't be discussed tonight. (4) At eight of the sites, contamination was found (5) and we conducted a risk assessment on them and (6) the risk assessment showed that there was an (7) acceptable level of risk.

(8) The types of sites shown here are (9) where contamination was found and each of the (10) facilities had a site where some contamination (11) was found. The types of sites can basically be (12) grouped into two types, underground storage tank (13) sites were sites where underground storage tank (14) material was used or where underground storage (15) tank sites had leaks, and then there was one (16) site where one spill of radioactive liquid (17) occurred.

(18) The types of contaminants that were (19) found were your typical petroleum hydrocarbic (20) contaminants: benzene, toluene, ethylbenzene (21) and xylene. And the only radionuclide detected (22) at the one contaminated soil site was cesium-137.

(23) The risk assessment done on this (24) list of contaminants showed that there were two (25) contaminants that had potential of causing

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(1) cancer, benzene and cesium-137. The risk (2) assessment when it was completed for both of (3) these sites showed that the potential risk at (4) both of the sites was below the acceptable risk (5) range, which meant there was very low likelihood (6) for potential risk there from these (7) contaminants.

(8) The risk assessment for the (9) noncarcinogenic contaminants, the ethylbenzene, (10) toluene and xylene, on the EPA guide was below (11) the level where it was likely that sensitive (12) population would experience adverse health (13) effects. In short, it's not likely that there (14) would be any of the health effects derived from (15) these contaminants present at the sites.

(16) The contaminant levels are shown in (17) the proposed plan for each of these sites, each (18) of these eight sites, and there is a table, I (19) believe it's on page 14, which shows the risk (20) range of these contaminants that would have to (21) be present at the site to cause a problem. And (22) if you look at the proposed plan and at the (23) different sites where contaminants were found, (24) you will see that the contaminants detected at (25) the site are orders of magnitude below the risk

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(1) range that is shown here on this table.

(2) In summary, for these 31 sites the (3) agencies are recommending no further action (4) based on the 23 sites where the preliminary (5) investigations, historical records and field (6) sampling have shown no contamination is present. (7) And for the eight sites a risk assessment has (8) been conducted that indicate that contamination (9) at the sites pose acceptable levels of (10) contamination.

(11) MR. JENSEN: We'll just go ahead (12) and let T.J. stay here and you ask any questions (13) that you like. Any questions for him?

(14) AUDIENCE MEMBER: Looking at your (15) table, what scenarios were used to determine (16) these values?

(17) MR. MEYERS: In the Track 1 process (18) there is a guide document that has been put (19) together and published and it pretty much (20) stipulates the scenarios and the exposure routes (21) that are presented. There is an occupational (22) exposure route, where any of the contaminants (23) within the first four feet are considered (24) available to an occupational receptor. And then (25) there is a residential scenario, and the

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(1) residential scenario basically assumes that if (2) someone would build a house right there at that (3) facility and take the dirt and create a basement (4) and take the dirt down to ten feet up and spread (5) it around their house and it would be available (6) for both ingestion and for inhalation.

(7) The basement scenario that you

were (8) talking about earlier where contaminants migrate (9) from a volatile point of view was not looked at. (10) The main reason was that these were considered (11) the most sensitive exposure routes and that was (12) the most sensitive – or most likely scenario or (13) the most reasonable scenario that was used.
(14) AUDIENCE MEMBER: I'm noticing he (15) is using air inhalation. In that basement (16) scenario, a basement scenario for indoor would (17) be a more dominant pathway than air inhalation.
(18) MR. MEYERS: The air inhalation (19) here is mainly, like, from an outdoor area where (20) you would inhale soil dust into your body. The (21) air volatilization –
(22) AUDIENCE MEMBER: Dust inhalation?
(23) MR. MEYERS: Yes.
(24) AUDIENCE MEMBER: Okay. Above that (25) is air volatilization.

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(1) MR. MEYERS: That is the next (2) pathway.
(3) AUDIENCE MEMBER: Well, see, it (4) doesn't make sense for me to do it that way (5) without including the indoor scenario, because (6) the indoor scenario is most likely to be a (7) dominant pathway as opposed to your outdoor (8) scenario by, I would say, several factors of (9) ten, a hundred, much greater. So I don't (10) understand why you put down the air (11) volatilization pathway but not an indoor (12) basement scenario.
(13) AUDIENCE MEMBER: I think it's (14) difficult when you have risk base numbers like (15) this – this is – if you notice for air (16) volatilization and the air inhalation there are (17) ranges presented.
(18) AUDIENCE MEMBER: Right.
(19) AUDIENCE MEMBER: And that is (20) because these are sensitive to the size of the (21) site. And I think there would be a number of (22) other variables involved if you were going to (23) try to come up with risk based numbers that was (24) based on inhalation within a house. Actually (25) EPA's risk base concentration for contaminants

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(1) are based only on ingestion, on water ingestion (2) or soil ingestion. So this table goes a step (3) beyond that to try to look at some of the other (4) pathways as well.
(5) AUDIENCE MEMBER: I agree, but my (6) point is if you're going to do air volatilization, (7) then Mr. Meyers said that they didn't look at (8) indoor pathways because it was a dominant (9) factor. I disagree that it is a dominant (10) pathway essentially compared to outdoor (11) volatilization pathways.
(12) AUDIENCE MEMBER: Depending on (13) route of entry into the house, you have less (14) pollution.
(15) MR. MEYER: Yeah. It's like radon, (16) your concentrations are going to be much higher (17) indoors than they will be outdoors. And that is (18) probably an important pathway essentially (19) since you have fairly low risk base acceptable (20) values for your outdoor, I would expect your (21) indoor to be even more conservative.
(22) AUDIENCE MEMBER: That's a good (23) point.
(24) MR. MEYER: I guess it's hard for (25) me to remember three or four years ago when they

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(1) were setting up this Track 1 risk assessment (2) process. But it really – it came down to how (3) do you take a contaminant level that is in the (4) soil, you can detect a sample and then say how (5) much of that is going to get into a particular (6) basement in a house. It was just beyond the (7) ability or the attempt here in this Track 1 (8) investigation to do that level of monitoring.
(9) AUDIENCE MEMBER: But doesn't EPA (10) have guidelines for that? Doesn't RAGS do (11) models or indoor basement determination of (12) concentration?
(13) MR. MEYER: Not specifically that (14) I'm aware of. The modeling that I'm aware of is (15) done mostly just for ingestion of soil or (16) drinking water standards. They might have (17) specifically done something like you're (18) mentioning with the radon concerns. They might (19) have some models along that line, but I'm not (20) aware of that list of chemicals that we've done (21) modeling on, but then, again, I'm not a risk (22) analysis person for EPA either. I could check (23) with somebody specifically and get back to you (24) on that if that would be helpful.
(25) MR. STORMBERG: I think there are

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(1) ways of addressing indoor models. And some (2) sites at INEL, for example the organic (3) contamination in the vadose zone at the RWMC, (4) they did look at some indoor modeling for (5) volatiles as well, but again, that was a (6) remedial investigation and a much more intensive (7) level of investigation than for these Track 1.
(8) MR. MEYER: I think that might be (9) one point to bring out, Jeff, is that these were (10) really just the beginning process to look at it (11) as a site, and most of the sites no contaminants (12) were found. And in many of the sites where (13) there is contamination that's elevated, they've (14) gone up to the next level for further (15) investigation, further evaluation.
(16) These sites here, you know, when (17) you look at the contaminant levels, they are in (18) the sub/part-per-million range.
(19) AUDIENCE MEMBER: My point still (20) stands that perhaps that's a pathway that you (21) should be looking at since I think it's more of (22) a dominant pathway than air volatilization.
(23) MR. JENSEN: Would you restate that (24) as a comment when we get there? That really is (25) a comment.

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(1) Any other questions that we have?
(2) None, okay.
(3) Let's go ahead and do the comment (4) period then. Same format as before, if you (5) please stand up and state your name so that the (6) court reporter can get your name and also speak (7) loudly. And after the comment period, these (8) folks will be around; for a specific question, (9) you can talk to them one on one.
(10) So is there anyone who would like (11) to comment? Yes, Mr. White.
(12) MR. WHITE: C.E. White. I can't (13) agree totally with my friend over here about the (14) house basement, what have you. Most of the (15) contamination – I'm even going as far as to say (16) all of the contamination that was found on the (17) ground or in that area, was not of a very deep (18) nature. It was probably above four or five (19) feet. Therefore, if you go down

into the (20) ground, you're not creating a dominant path, I (21) don't think.
(22) I think your more dominant path is (23) the way it's looked at because you're living in (24) Idaho, and if you live in Idaho, you've got the (25) wind. And this is going to be the greatest, I

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(1) think, path of contaminant would be from the (2) surface areas that would be stirred up by the (3) wind or whatever. I can't – I agree with most (4) of your other things, but I can't with that.
(5) MR. MEYER: I can talk to you about (6) that.
(7) MR. JENSEN: Just to keep this (8) process pure, are you done with your comment?
(9) MR. WHITE: Yeah.
(10) MR. JENSEN: If you want to comment (11) go ahead and give your name.
(12) MR. NOVAK: My name is Steve Novak. (13) I feel that the indoor pathway should be (14) addressed as well as the outdoor pathway. For (15) several reasons. And I'll address Mr. White's (16) comments. The fact that there is a lot of wind (17) in Idaho probably decreases the outdoor pathway (18) even more, because the concentration on the (19) outdoor pathway most likely would be lower due (20) to the fact that there is high wind, fresh air (21) will bring and move contaminants away.
(22) As far as the basement scenario, (23) contaminants not only go through the basement (24) they go through the walls and the sides of the (25) basement as well. So, usually, contamination

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(1) anywhere from one to ten feet was a concern when (2) you have a basement because it gets sucked into (3) the basement in the pressure through the outside (4) and the basement. There is a large concern of (5) radon. It's also a concern of volatiles: (6) benzene, toluene, ethylbenzene, especially (7) benzene which is more toxic than the other (8) contaminants.
(9) MR. JENSEN: Thank you. By the way (10) as you noticed. We don't respond during your (11) comments. We just let you speak your piece (12) without commenting on those.
(13) Any other comments tonight? Okay.
(14) I'll go ahead and close this formal (15) comment period then. Again, thank you very much (16) for coming and remember again, comment period (17) doesn't close until June 17, so you can submit (18) the things in writing anytime during that (19) period. And folks will stay around if you want (20) to talk to them one on one. Thanks, again, for (21) coming. Folks, if you want to give us an (22) evaluation on our meeting tonight, please do so.
(24) (The hearing concluded at 8:30 p.m.)

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(1) REPORTER'S CERTIFICATE (2) STATE OF IDAHO)
(3)) ss. (4) County of Ada)
(5) I, NANCY SCHWARTZ, a Notary Public (6) in and for the State of Idaho, do hereby certify:
(7) That said hearing was taken down by (8) me in shorthand at the time and place therein (9) named and thereafter reduced to computer type, (10) and that the foregoing transcript contains a (11) true and correct record of the said hearing, all (12) done to the best of my skill and ability.
(13) I further certify that I have no (14) interest in the event of the action.
(15) WITNESS my hand and seal this 18th (16) day of June, 1994.
(17) Nancy Schwartz
(18) Nancy Schwartz, Notary
(19) Public in and for the
(20) State of Idaho (21) My commission expires: (22) November 5, 1996

I N D E X

IDAHO FALLS, MONDAY, JUNE 6, 1994

MR. JENSEN: Good evening, folks. I'd like to go ahead and get started. My name is Nolan Jensen, and I'll be the moderator tonight.

I won't be presenting a whole lot, but we would like to welcome you to our public meeting tonight on a couple projects at Test Area North. And also we're in the middle of a comment period on these projects, and we have received several written comments already, and so we would like to thank those of you who have submitted those if you're here.

I would just like to start with, perhaps, we do have an agenda, and we'll try to follow that, but we'll try to be fairly informal. And if you'll notice on the back, there is an evaluation form. As we go through this process, when we do public meetings and comment periods, et cetera, we try to improve those each time if we can, so if you have comments on things that would help you out better, let us know on the back of this form.

There are a couple of reasons for

our meetings, and I'll refer to this chart here. Basically there are two reasons. Number one, we would like to give you information, and second, we would like to hear your concerns and receive your comments. So, generally, it's a give and take situation here.

Tonight, as I mentioned, we're talking about two parts of this proposed plan. The first part is the Test Area North groundwater contamination. Then the second part will be several small scale investigations that we refer to as Track 1s, and I'll explain what that means a little bit later. I would like to give you a real brief update on the Environmental Restoration Program as a whole in general terms.

There are copies of these -- are they outside, Reuel? -- as well, and also down in the Mall. This is a Citizens' Guide that was developed a couple of months ago, and it's just a general overview of the entire program, cleanup program. So if you would like to get more general information, you're welcome to pick up a copy of this.

Just as far as some things that are going on. Actually we're real pleased with our

program. We signed the Federal Facility Agreement that controls our work about three years ago now, three and a half years ago with EPA and the State of Idaho. And in that time we have completed nine Records of Decision for cleanups. We have two more that are very close to Record of Decision, and then this one will be Number 12. So we're real pleased with that.

Also we have met 27 out of 27 enforceable milestones under that agreement. So, again, we're pleased with that. Also, in some cases we are accelerating the schedules in that agreement, and we have three waste area group comprehensive investigations that are about a year or two years ahead of schedule. So, again, we're real happy with that.

As far as things that are going on as far as cleanups, we just finished up the TRA Warm Waste Pond, which was an interim action. We also completed an ordnance interim action, cleaning up some of the ordnance and bombs, I guess, for lack of a better term, that were placed on the site by the Department of Defense several years ago. That one was completed. And then the TAN injection well interim action that

we'll be talking about a little more tonight. That is on-going right now.

So there are a lot of things going on. The next things that will be coming up are -- we have the CFA or Central Facilities Area Landfill investigation that will be coming out this fall or winter. We have another semiannual briefing, which is just a kind of a programmatic overview. That will be coming out this fall. So that just kind of gives you a general idea of where the program is. And I hope that helps a little bit.

We have a couple of subjects we're going to talk about tonight. And before I introduce the presenters, I'd like to cover a couple of things for you to just kind of hopefully give a little bit of a head start on where we're going. The INEL Federal Facility Agreement divided the INEL up into ten Waste Area Groups, and those essentially correspond to the different facilities out at the site.

Waste Area Group No. 1 is Test Area North, and that's what we're talking about tonight. Each of the Waste Area Groups is further divided down into Operable Units and

those Operable Units which are these numbers here are further divided into the several sites. Tonight we'll be talking about the Test Area North groundwater investigation. And also that's closely tied to the injection well interim action which is already ongoing.

We'll also be talking about several preliminary investigations and those are several smaller scale investigations at several sites in other Operable Units, and we'll be talking about 31 of those sites tonight very briefly.

After we do all of these investigations, at the end for each Waste Area Group there is a comprehensive investigation that ties it altogether and we call that the Comprehensive Investigation. And that will be coming up for Test Area North and it will start in about a year from now. Those will be ongoing for each of those Waste Area Groups. So hopefully that will give you a little bit of a feel how this fits together.

One other thing that I would like to talk about briefly, and for those of you who were here last time, this will be a repeat. But whenever we talk about the cleanup program at

INEL, and any cleanup under Superfund for that matter, basically what we're doing is looking at releases of contaminants or hazardous substances and evaluating the risk that they pose, and so the whole investigation comes down to a risk assessment. And there are two parts of a risk assessment that we talk about, or two different aspects of risk.

One is carcinogenic risk, or cancer causing contaminants, and then noncarcinogenic risk, or the other types of health effects. Examples might be organ damage or birth defects. Those sorts of things. So those are the two general categories. And when we talk about risk under each of those categories, we express them in different ways.

For carcinogenic or cancer causing risk, EPA has established a risk range and as long as you're within that or below that risk range in this area, then the risk is deemed to be acceptable and cleanup is probably not required. If you're above that risk range, then it is most likely required. The risk range that was established is between one and 10,000 and one in 1,000,000 chances of someone contracting

cancer above the national average for anyone who might be exposed to that situation.

Under the noncarcinogenic risk there is a threshold established at one. And we talked about, rather than a risk potential, we talked about a hazard index which is a little bit different. A hazard index of one or less, basically says that we have a high degree of certainty that whatever health effect is associated with that contaminant will not happen even for a sensitive population. So below one, we're very certain that there is not going to be a health effect.

So, hopefully, that will just give you a little bit of a heads-up on what we're going to be talking about tonight and how these investigations wind up, and they will be referring to this chart throughout the evening as we talk about the different projects.

Before we begin the presentation, I just have a couple of things logistic-wise to cover. As I said, the meeting will be basically in two parts tonight, and so what we'll do is we'll have first the presentation on the Test Area North groundwater. That will last 15 or 20

minutes. Then we'll have a question and answer period that you can ask any question that you want. And then after the question and answer period, we'll have a formal comment period.

And during that time you can provide any comments orally that you would like. And we have a court reporter here who will take down those comments. And I'll kind of moderate and help things along as we go.

I believe that covers most of the things that I wanted to cover. The last thing that I want to do is introduce some of the people that we have here tonight. First of all, as we go into this investigation process, we do that hand in hand with EPA and the State of Idaho as signatories to our agreement.

And I would like to introduce Margie English tonight who is here from the Idaho Department of Health and Welfare. Let her give a statement and then Matt Wilkening from the Environmental Protection Agency, Region 10 out of Seattle. I'll just give them a minute now.

MS. ENGLISH: I'm the Waste Area Group manager for the State working on the Test

Area North Project. And I also would like to introduce a couple other members of our state team that are here tonight. We have Jeff Fromm who is a toxicologist who has helped evaluate the sites from the risk aspect. We also have Gary Winter who is a hydrogeolgist who has helped us evaluate the groundwater aspects of the sites. And on behalf of myself and my colleagues, I would like to welcome you here tonight. We're very glad that you came.

The State really encourages the public participation process. And I can see by looking around the room here that many of you who are here tonight were also here at our meetings about a month and a half ago for the NRF and RWMC projects, and we're very happy to see your continuing interest in the INEL.

The groundwater problem that you'll hear about tonight is a complex one and it's one that will not be easily solved. Over the past couple of years we have worked with the DOE and the EPA to evaluate this problem and to formulate viable remedial alternatives. We believe that the preferred alternative that you'll hear about tonight is the best approach

to continue to address this problem.

As Nolan said, the purpose of the meeting tonight is to give you the data and present to you the remedial alternatives, give you a chance to ask questions and also to find out what your opinions are on the remedial strategy that we'll be proposing.

The comments that you make, either written or verbal, will then be used to help formulate the final remedial decision for these sites which will eventually be formalized in a Record of Decision.

So with that, I'd like to, once again, thank you for coming and encourage you to ask any questions, and also, please don't hesitate to offer any comments on the sites tonight. Thank you.

MR. WILKENING: Matt Wilkening with the EPA, a brand new project manager on this site that I just took over from the previous project manager about a week ago. Again, we're glad that you're here and putting in comments on the site. We do appreciate any comments that are given by the public on our proposal. We've worked closely with the State and the Department

of Energy in drawing up this proposal and do feel that it gives the best of possible proposals that are out there that we've chosen for this. So we'll let you continue on with the meeting.

MR. JENSEN: Thank you. Before we get started, I would just like to mention there will be a presentation and then a question and answer period after. We would like to keep it fairly informal, so if you have a quick clarification question during the presentation go ahead and stop them and ask that. If they are more lengthy, you might want to wait until the end so we can get through it.

I will now introduce Dan Harelson who is the Department of Energy Project Manager for Waste Area Group 1. And then I'll let Dan introduce Greg.

MR. HARELSON: I'm Dan Harelson. I'm the Department of Energy WAG Manager for Waste Area Group 1, which is the Test Area North. As I'm sure most you have are aware, the Idaho National Engineering Laboratory is a Department of Energy site that's located about 50 miles west of Idaho Falls. The entire site covers about 890 square miles. Most of the

facilities are located here in the southern portion of the site. The Test Area North, which is the subject of tonight's meeting, is about 28 miles north of these other facilities.

The Test Area North was originally established to support research and development on nuclear powered aircraft. This was done in the 1950s and early 1960s. Following cancellation of that program in the early 1960s, there were several efforts involving research and development on nuclear energy. There are four facilities at the Test Area North.

The Technical Support Facility as the name implies is a support facility where there are maintenance shops, vehicle shops, offices. The guard gate is there. There is a fire station there. There is also the Three-mile Island core debris is being stored in a pool there and there is the Hot Shop, which is used to work on radioactive equipment.

Other facilities include the Initial Engine Test Facility, which was the test area for these nuclear powered aircraft. It is no longer in use. These are the same aircraft engines that are on display down at the

Experimental Breeder Reactor 1. The Loss-of-Fluid Test Facility and the Water Reactor Research Test Facility were both used in the research and development efforts on nuclear energy.

Currently, at the Loss-of-Fluid Test Facility, the Army has a manufacturing facility that manufactures advanced armor for the M1-A1 tank. There are a couple of small programs at the Water Reactor Research Test Facility. One of them evaluates supercritical water oxydation, which is a treatment process, and there are also efforts going on for developing a nuclear -- not nuclear, just explosive detection.

This is an aerial view of the Technical Support Facility from a little bit different angle. The groundwater contamination problem that we have at the Test Area North is related to an injection well which is located right about here (indicating). The injection well is a 12-inch diameter pipe that went directly to the aquifer, the Snake River Plain Aquifer. It was used from about 1955 through 1972 to dispose of pretty much all of the waste

water that was generated at the Test Area North. That is everything from industrial and process waste water to sanitary sewage effluent after treatment.

The most wide-spread contaminant that we have at Test Area North is trichloreothene, it is also called trichloroethylene or TCE. It extends from the injection well about a mile and a half and the plume is a half mile wide.

This contamination was first discovered in 1987 during routine drinking water sampling. An air sparging system was installed in the drinking water supply to keep contaminant concentration below the federal drinking water standard.

In 1990 we performed sludge removal and removed about 45 cubic feet of sludge from the injection well itself. In early 1992 we came out with public meetings for an interim action and also to scope the Remedial Investigation/Feasibility Study that is the subject of tonight's meeting. The injection well interim action began operation in about mid-February of this year. We had originally planned to operate that action at 50 gallons a

minute, pumping from the well at 50 gallons a minute.

We have run into a number of surprises that has kept that pumping rate at a lower level, but we have been removing significant amounts of contamination. We have been operating in a batch mode. That is, we have been removing about 10,000 gallons at a time and treating that and discharging it. And to date we have removed about 3,000 pounds of organic contaminants.

I will introduce Greg Stormberg now. He is one of the principal investigators on the Remedial Investigation/Feasibility Study. He can provide some more information on what we did for the Remedial Investigation/Feasibility Study. The range of alternatives we evaluated. And then when he is finished, I will come back and try to describe the alternatives as presented in the proposed plan and explain why we prefer the alternative that we prefer. So with that I'll introduce Greg Stormberg.

MR. STORMBERG: Good evening. What I would like to do today is basically give you two short descriptions of two areas of

Remedial Investigation/Feasibility Study.

First, I'd like to present the findings of the Remedial Investigation, that's the characterization phase of the project, and then present the types and the range of technologies that we evaluated and how we refined that list of technologies to get to the preferred alternative.

Now, with respect to the Remedial Investigation, there are two basic objectives of the Remedial Investigation. One was to define the nature and the extent of contamination or the types of contamination that we have in the injection well and the groundwater and, also, what is its distribution? What are the distributions of those contaminants?

Then secondly, we'll take that information and evaluate the risks posed by those groundwater contaminants. In order to define the nature and extent of the contamination, a number of groundwater monitoring wells were drilled. They are symbolized by these black dots here on this board that you see. And we also conducted several rounds of groundwater sampling and analysis, and what we found from

the Remedial Investigation as well as from past investigations in 1989 and 1990, was that we have basically seven contaminants that we're concerned about.

These include both volatile organics and radionuclides. The volatile organics, as Dan has already mentioned, TCE is the most widely distributed, but it also includes dicholoroethene or DCE and tetrachloroethene or PCE.

The radionuclides that we detected included cesium-137, tritium, strontium-90 and uranium-234. As Dan also indicated, we're seeing some surprises as a result of the interim action, things that we weren't aware of initially. We've detected americium-241 during one of the samplings into the injection well.

And we've also seen another volatile organic, dicholoropropane. So basically, we have a fairly dynamic system. We want to make sure that we keep an eye on these as we continue the interim action and our remedial action for this Operable Unit.

But what we can say about the horizontal or lateral distribution of these

contaminants is, as Dan indicated, TCE represents the widest distributor, widest migrated contaminant in the groundwater. It extends from essentially the Technical Support Facility a mile and a half down the groundwater gradient to the Water Reactor Research Test Facility and the plume is about a half mile wide.

All of the other contaminants that we found in the groundwater are less widely distributed and fit within this plume. In fact, I think the next most widely distributed plume is only about a half mile from the injection well. So we'll use the TCE plume as our baseline contaminant plume.

A second very important point that we needed to address with respect to TAN was: What is the vertical extent of the contamination? In the subsurface TAN, we're basically dealing with basalt flows with sediments that have been laid down in between those basalt flows. We call those sedimentary interbeds. And there were two points that we wanted to look at.

We wanted to look at how continuous this interbed is and what is it composed of, or

what does it consist of and how thick is the contaminant plume? The effective aquifer extends from about 200 feet below land surface to well over 800 feet. So we have a 600 or 700 foot effective aquifer at TAN, and we needed to define the extent of contamination in that area.

What we found as a result of the RI was that this interbed here is composed of silt and clays and some fine sand. It ranges in thickness from about 15 to about 40 feet thick and it is fairly continuous, at least as far as we know it today.

We also found from groundwater quality data that contaminants in the Snake River Plain Aquifer above this interbed exceed drinking water standards. The groundwater below this interbed, there are no contaminants that exceed drinking water standards. These two features are fairly important with respect to the remediation of the TAN area for the reason that the interbed acts as an barrier to the migration of the contaminants from the upper part of the aquifer to the lower part of the aquifer.

And secondly, with respect to

remediation, we're dealing with a much smaller volume or potentially smaller volume of water than if contamination had been distributed across the entire effective thickness of this aquifer. So those are two important features that I want to point out. One other point I need to bring out here is that with respect to the injection well itself, disposal of waste to the injection well ceased well over 20 years ago and yet we still find the highest concentration of contaminants in the immediate vicinity of this well.

This indicates at least one very important thing and that there may be additional or continued residual undissolved contaminants in the vicinity of that injection well that are continuing to provide input to the basalt flow that we see further down gradient, so that's important.

Now with that information in hand, the second step of the RI was to evaluate the risks posed by those contaminants to human health and the environment. And we looked at three basically different scenarios. The first was a current industrial use scenario where we

considered workers and visitors using water from the production well. This is from about present to the year 2040.

And we looked at two future residential use scenarios. One where water was being used from the general groundwater plume, and then the second future use scenario is water being taken directly from the injection well itself. For all three of these scenarios, we evaluated several exposure pathways and how those contaminants are taken into the body.

The first was the inhalation of the volatiles from volatile organics. And secondly, we looked at the ingestion of that water, the drinking of that groundwater. For the future residents we also take a look at ingesting food crops that had been irrigated with the contaminated water.

What we found when we calculated the various risks from those three scenarios was that under the current industrial use scenario where we're only using water from the production wells that are currently operational, the total cancer risk associated with that was one additional incidence of cancer per one million

individuals. So we're below the acceptable range as defined by EPA.

That hazard index that was calculated under that scenario was about .8. That indicates that sensitive populations are probably not going to be adversely affected by exposure to those contaminants under the scenario. For the future residential use scenario where water can be pulled from anywhere within the plume except the injection well, what we found was that the total cancer risk was one additional incident of cancer per 100,000 individuals. That's within the acceptable risk ranges by EPA. And that the calculated hazard index was right about one, again, indicating that adverse effects are probably unlikely to a sensitive population.

Now on the other hand, what we found for the future resident in the use of the water directly from the injection well, that means if they can put a pump down there in the future and pull the water and utilize it, we found that the total cancer risk range from that -- or the total cancer risk was two additional incidence of cancer per 1,000 people. So as you

can see -- I'll use this little arrow here to indicate it -- we're above the acceptable range defined by the EPA. So we have unacceptable risk from the cancer causing constituents.

With respect to the hazard index and the noncarcinogens what we found was a hazard index of about 23. That's a fairly high hazard index and it's probable it would have some adverse health effects associated with consumption or use of that water.

Knowing that we had unacceptable risk from the use of the water from the injection well, we went ahead and performed a Feasibility Study. And there are three basic stages to the Feasibility Study. First is to identify the range of viable alternatives or potentially viable alternatives for that site. In this case we're dealing with groundwater.

The second stage is to then screen that full universe or range of alternatives against the criteria that has been established by the EPA. The reason that we do that is so we can refine that list of technologies to get it down to a handful of remedial alternatives that are potentially applicable to the site in

question.

What I would like to do is just kind of run through examples of the range of alternatives that we identified and the screening criteria that we put them against. There are six general categories that we call general response actions. And with the exception of the No Action alternative, the other five have a number of technologies that are potentially applicable.

For example, institutional controls might include an alternative water supply, fencing, deed restrictions, things of that nature. Containment technologies would include things such as physical barriers, route pertinence or hydraulic containment where we siphon the water to keep it in place and prevent future and further migration. The collection and removal of contaminants, probably the most widely used in the groundwater contamination problems, includes the use of extraction wells and injection wells where we pull water -- contaminated water out and treat it and then we reinject it back into the aquifer.

Above-ground treatment technologies.

These are really the process options. How we treat the water that we pull out of the aquifer. These might include things such as air stripping, carbon adsorption, UV oxidation, ion exchange, things of that nature. The treatment in place technologies are generally associated with remediation technologies in place or in situ vitrification.

Once we've identified that whole list of technology you can tell that we can't do a very detailed analysis on that whole range, there are just too many alternatives. So we apply the screening criteria as set down by the EPA and these include things such as the protection of human health. Does that technology protect human health and the environment? Does it comply with the federal and state laws? Is it effective both in the short term and the long term? How easy is it to implement? What is its costs? Things of that nature.

Then we have a couple of other criteria, the public and State acceptance, and that is one of the reasons that we're here tonight.

When we applied the screening criteria to the list of potential groundwater technologies we basically came up with four that we considered viable for the TAN groundwater contamination site, and Dan will talk about the specifics of those alternatives as well as the preferred alternative.

MR. HARELSON: The proposed plan presents four alternatives for remediation action at the radioactive Test Area North. The first alternative is No Action and the name implies or suggests we wouldn't do anything to remove contaminants or try to contain the spread of contamination. As with all of the alternatives, we would monitor the way contamination changes over time.

The second alternative that we looked at was Limited Action using institutional controls. Institutional controls limit access to the water. They would prevent people from being exposed to the contaminated water. This could be done through either physical means such as fences and signs.

It could be done by putting a supply well outside away from the contamination

plume, or it could be done through administrative mechanisms like deed restrictions which would say, if you're going to buy this land, you can't put a well in the contaminated plume. Its costs are higher, there is a monitoring component and then there are costs associated with those controlling it.

Alternatives 3 and 4 are very similar. Alternative 3, which is our preferred alternative includes three main components. The first piece of it is continuation of this interim action that we've spoken about. The second piece is using an enhanced extraction technology to try to remove that undissolved secondary source material that we believe is in the vicinity of the injection well. And the third piece involves trying to remediate a portion of the dissolved contaminant plume.

We would continue the interim action so that we would continue extracting contamination from the groundwater while we are designing and constructing this enhanced remediation facility. Continuing the interim action would also provide some measure of hydraulic containment. It would pull the

contaminants back toward the well to some degree and keep them from spreading as quickly.

The enhanced removal technologies that we are considering involve some steam enhanced recovery contaminant or surfactant enhanced recovery of contaminants. Surfactant enhanced recovery involves, basically, the injection of soapy water into the aquifer. The soap helps to solubilize contamination so that it moves towards the extraction well. It can then be extracted, the contaminants removed and then treated water would be reinjected at federal drinking water standards or below federal drinking water standards.

The third piece of Alternative 3 involves treating extracted, contaminated groundwater and treating it from a fairly small area of the dissolved contamination plume. The wider area of contamination outside of the small area would then be addressed under both the WAG-wide RI/FS and the INEL-wide RI/FS.

The third piece would attempt to remove all contaminated groundwater that is contaminated above 5,000 parts per billion

trichloroethane and reduce that contaminated level to five parts per billion, which is the federal drinking water standard.

Alternative 4 is identical to Alternative 3 except we would try to treat a much larger portion of this contaminant plume. At least in theory, that approach would restore the aquifer to meet federal drinking water standards by 2040. And the reason 2040 was picked was that's a reasonable estimate of the time when the site will become available for other non-DOE uses.

Alternative 3 is our preferred alternative even though it does not address the whole contaminant plume. It focuses on the source of contamination and in order to clean up the wider dissolved area of contamination, it's necessary, first, to deal with the source. By focusing on the source, we believe that we're directing our resources at the worst part of the problem.

By deferring the cleanup of the this wider area of contamination to the WAG-wide and the INEL-wide RI/FS, we're building flexibility into the process so that we can

adapt our cleanup strategy as we learn more about the problem, and in the long run save money in the overall cleanup action.

So with that I'll turn it back to Nolan.

MR. JENSEN: Thank you. We'll go ahead and start our question and answer period. You've been fairly quiet, so don't be shy. I will try to keep it very informal. We do have a court reporter here keeping minutes, so if you wish to speak, speak right up so she can hear you and we'll go ahead for 15 or 20 minutes and then we'll conclude that and go into the formal comment period.

So, please, just questions now and if you have comments, save them until when we actually do the comment period so that we're sure that we get those down accurately. So, any questions?

AUDIENCE MEMBER: This plume that is stationery, is it kind of moving out slowly to involve more and more of the aquifer?

MR. HARELSON: It is moving, as you said, slowly. The water table at Test Area North is fairly -- Greg probably knows the

average velocity better.

AUDIENCE MEMBER: Did you calculate how fast it might have -- in other words, you're calculating according to time; right?

MR. STORMBERG: Time and distribution of the contaminants, yes.

AUDIENCE MEMBER: If you deal with the wells first, by the time you can get to anything that you find about the plume --

MR. STORMBERG: The groundwater in the vicinity of TAN, and if you look at groundwater flow, let's equate that to the worst or most widely distributed contaminant, which is TCE, we're going to assume it flows with the groundwater with no retardation at about .13 meters per day, or about three feet per day.

AUDIENCE MEMBER: How soon will it get to Idaho Falls?

MR. STORMBERG: Well, let's put it this way, we didn't calculate that.

AUDIENCE MEMBER: Why not? We live here.

MR. STORMBERG: I know you do. In the 20 years since operations have ceased disposing to the well, it's only a mile and a

half.

AUDIENCE MEMBER: In 20 years?

MR. STORMBERG: Yes.

MR. HARELSON: Didn't we do some modeling out?

MR. STORMBERG: We did do modeling out to the year 2094, so essentially 100 years, and if I remember the distance is accurate, we're only talking about an additional migration of 10 miles, 10, 15 miles.

AUDIENCE MEMBER: Technologies will be more sophisticated as we go on.

MR. STORMBERG: But it's not moving very fast.

MR. HARELSON: Well, in these RI/FS that I mentioned at the end, one of them starts in about a year, the other one starts in 1999, is that right? So, we're talking on the order of five years rather then 100 years.

AUDIENCE MEMBER: One more thing, when you pulled out the stuff from the well and you treated it or you removed it or you treated it, you removed 3,000 pounds of sludge, you say?

MR. HARELSON: We've removed about 3,000 pounds of contamination since this interim

action started. The treatment process, there is a pretreatment unit that uses ozone and that has destroyed a significant fraction of that contamination. Some of it has also been captured on a carbon adsorption carbon unit that is being recycled off site.

AUDIENCE MEMBER: I just kind of wondered if you ever had to take what you found and stored it somewhere?

MR. HARELSON: Well, the organic contaminants -- a significant portion was destroyed by this treatment process, this pretreatment process. The portion that was not will be recycled at an EPA permitted off-site facility.

AUDIENCE MEMBER: Here in Idaho?

MR. HARELSON: Not certain, but possibly.

AUDIENCE MEMBER: Where is it now?

MR. HARELSON: It's in storage at Test Area North.

AUDIENCE MEMBER: Is any of the water within this plume used on site right now or were those examples purely hypothetical?

MR. HARELSON: Yes, it is used on

the site. The two production wells that supply drinking water to the Test Area North are located up here right on the edge of the five parts per billion plume. That water is treated with this air sparging system. The only contaminants that we're seeing in those production wells are the organic contaminants, we're not seeing any of the radionuclides.

AUDIENCE MEMBER: The values that you put up on the chart as far as risk levels, were those average values, 95 percent values?

MR. HARELSON: For drinking from the plume, it is an average value, in aerially weighted average concentration for the approximate plume, so the concentration at any given point in the plume was represented by an aerially weighted average and that aerial weighting was based on a computer model that was performed.

AUDIENCE MEMBER: So did you do an uncertainty analysis?

MR. STORMBERG: Yes, we did. I can't give you the specifics. We did bring a copy of the Remedial Investigation report and we'll go into detail on that on the baseline

risk.

AUDIENCE MEMBER: Do you know what some of the bounds were on the lower?

MR. STORMBERG: We can look it up and find that answer for you.

AUDIENCE MEMBER: The residential scenario, was that an indoor and an outdoor scenario for houses? I thought I saw houses.

MR. HARELSON: I think that was primarily for illustration. It looked at inhalation and ingestion of the water. Inhalation of vapors off the water, ingestion of water and then ingestion of crops irrigated by the water.

AUDIENCE MEMBER: Inhalation indoors?

MR. HARELSON: By showering, I think, was the primary mechanism.

AUDIENCE MEMBER: Did you have basement scenarios in those houses?

MR. STORMBERG: No, we didn't have basement scenarios since we're dealing with an aquifer and we're pulling the contaminants up. We have a 200 foot vadose zone where we haven't detected; basement was not a scenario option or

a viable scenario at this time.

AUDIENCE MEMBER: You haven't detected any plumes outside?

MR. STORMBERG: No, we didn't.

AUDIENCE MEMBER: I would like a clarification on your question you were asking about the lower bound, what do you mean?

MR. MEYER: Usually when you do a risk analysis -- just giving an average value doesn't tell you too much about it. You really need to know the upper and lower bounds of the distribution of the risk value. Otherwise, you don't know how uncertain it is. The reason I talked about the basement is a lot of times if you have a basement, we consider basements in houses due to the pressure differential, it takes the plume and sucks into the basement gathering a higher concentration in basements.

MR. STORMBERG: With respect to that, as I mentioned, that vadose zone is so thick that it's basalts and some sediments and we haven't seen any vapor contaminants in the vadose zone.

AUDIENCE MEMBER: When you were doing your population, you said sensitive

population, what particular sensitive population were you looking at? Were you looking at little children? Were you looking at adults?

MR. JENSEN: You're talking about just hazard index? This statement on here?

AUDIENCE MEMBER: Right.

MR. JENSEN: For sensitive population.

MR. STORMBERG: Well, the sensitive population in the general term equates to the young infants and children and the older people who may be more susceptible to coming down to organ damage as a typical default when you look at that.

MR. JENSEN: Those by the way, those are established not as part of the risk assessment, but those are established by EPA and other guidance those indices for those contaminants.

MR. MEYER: Yes, I think, maybe, I can address the question about bounding the risk. I think -- were you asking about the probability of distribution of risk? Because basically all Superfund risk assessment involves using an average value for contamination, then

using fixed percentiles for all of the other exposure parameters and the uncertainty analysis. The way it's usually done as more of a qualitative analysis. Are you talking about more of a probabilistic analysis like a Monte Carlo?

AUDIENCE MEMBER: Either one. In other words, if you were going to use upper bound values, even if they were to point the estimates to provide a table, it would be helpful to me.

AUDIENCE MEMBER: Is there any sort of cost risk chart that we could see?

MR. HARELSON: Not so much cost versus risk. I believe, this alternative, if I remember right, the risk in the plume, the average plume, with the source controlled, is about one times ten to one minus five. By spending the $21- to $26 million, we would reduce that risk to about four times ten to the minus six. By spending 58 to 96, we would get down to two times ten to the minus six. That's a rough number from calculations that I did. So we're getting a great deal of risk reduction for this amount of money and it declines the

amount of risk reduction that you get for spending more on that.

MR. STORMBERG: Reuel, do we have a copy of the Feasibility Study here?

MR. SMITH: I don't believe so.

MR. STORMBERG: I can get one at the break. There is one in my car, I think. It's a time residual risk plot with the various scenarios, so I'll go get that and make it available.

MR. JENSEN: Why don't we make it available at the break, if anyone wants to see it.

AUDIENCE MEMBER: I just have one more question. Did you consider any sort of dermal absorption in the shower scenario as exposure?

MR. STORMBERG: No. Again, we just didn't feel that the contact time would be significant enough to warrant that as an advisable exposure pathway.

AUDIENCE MEMBER: Did you do any sort of testing?

MR. STORMBERG: No.

MR. JENSEN: Any other questions?

Even if you don't have questions right now, Dan and Greg will be around at the end, so if you want to stick around and talk one on one, they will be available.

The way our agenda is set up, we'll go directly into the comment period now, but we could take a very short break if anybody wants to before that. Does anybody need to take a break? Okay. We'll go ahead and start right into that. One more chance on the questions? Any more questions?

Before we start the comment period, I just want to mention a couple of things. That is, we're in the middle of the comment period which lasts until June 17th. If you don't want to give an oral comment tonight here with the court reporter, at the back of the proposed plan there is a comment sheet. It is postage paid preaddressed, so you just need to fill it out and send it in and we'll get it. You can do that anytime until June 17th and we welcome those.

Since this is a more formal part of the meeting and it is a comment period, I would like to ask you to please stand up and state

your name if you have a comment. State your name and then give your comment.

Reuel, did we have anyone sign in as a commenter?

MR. SMITH: I'll go look.

MR. JENSEN: We'll have those who actually signed up first, and then we'll just open it up for general comments. So no one signed up to give a comment, so is there any one who would like to stand and give a comment at this time?

MR. WHITE: C.E. White. I've read this thing pretty thoroughly and we've had some discussion one to one, too, here tonight and previously. What you accomplish with remedial alternative No. 3 would be the preferred one. It certainly appears from anything that you can come up with from the study, it would alleviate any major problems. I can't see where there would be worth spending all that additional money to do four when you don't really accomplish that much more out of it.

Your relationship between what's accomplished against what is spent. The closer you get to four from three, the more the ratio

changes and you get less for your money. Not that money should be the total alternative or total basis of the alternative, but with what you get out of three, certainly seems to solve the problem, unless, in the future it's discovered that three is not doing what we thought it was going to do. Let's put it that way.

One of your surprises was finding some things which you didn't know were there. Well, who knows, maybe in the future, although you'll take care of those now, who knows in the future if something else comes up in their little head, and you have to reassess something. But, to me, the Remedial No. 3 would be the way to go, and it would be, I think, enough protection to satisfy most anybody that I've ever talked to about it.

MR. JENSEN: All the comments that are submitted tonight, there will be a formal response to those, and the next step in the process is to come out with a Record of Decision, and that Record of Decision will include a response in the summary with written responses to your comments.

MR. WHITE: I would like to add one more item to what I just said. We were discussing the injection of other substances to try to, let's say, loosen up some of the things that are in that plume, the two were the steam and the other so-called soapy alternative.

Certainly the steam, if it works, the way it works in the oil the fields, would be a much cleaner type operation to go into rather than injecting some other item into the ground and then have to pull that out, soap or whatever that they drove into this thing, so I'm assuming that in looking at these that the steam would be looked at first, am I right?

MR. HARELSON: Right now they are being treated equally.

MR. WHITE: Equally?

MR. NOVAK: My name is Steve Novak. And, I guess, I agree with Mr. White that the Alternative No. 3 is probably the best for your cost ratio, and groundwater is very difficult to clean up. It's a difficult problem and cleaning up the contaminated sediments and residuals, I think, is your best alternative as opposed to going after the entire plume.

MR. JENSEN: Okay. Thank you. Anyone else? Again, even if you don't comment now, remember, can you submit it in writing, so it's not your last chance. Going once, thank you. That will conclude this portion of our meeting. We'll take about a ten-minute break and then we'll come back.

The second portion of the meeting is much shorter, however, we'll talk about the preliminary studies. So we'll go ahead and take a ten-minute break and see you in about ten minutes.

(A recess was taken.)

MR. JENSEN: If we can get you to take a seat, please, we'll go ahead and get started.

The second part of this presentation will go pretty quick tonight. I'll give you a brief introduction to what the second part of the meeting is about. When we signed the Federal Facility Agreement, which controls our whole cleanup program, there were about 400 sites at the INEL that were identified as potentially being contaminated and needing some type of investigation.

Out of those 400 sites, some of them like the TAN groundwater that we talked about earlier, those were obviously problems and we needed to deal with those. But in a lot of cases a lot of those sites were identified based on interviews with people. There might have been a spill out there. We know there is an underground tank that is going to be pulled, so a lot of the sites we had little information about and were much smaller scale problems.

But we still needed to evaluate them. So under our agreement we set up a preliminary investigation process. And there are two parts of that, and we refer to those limited field investigations as Track 1s and Track 2s. And basically what those are: A Track 1 is just a very straight forward evaluation based on, mostly, on existing data. Once in a while we'll take a quick sample or two, but in general we base that on existing data and see if we can come up with a decision based on that.

The other is a Track 2, which is a little bit more extensive, where we feel like we actually need to go out and collect a little bit

of field data to do an evaluation. So in both cases, out of those 400 sites, the majority of those go through this process first. And as we complete the Track 1 and Track 2 limited investigations, there are a number of outcomes.

First of all, if we find that the contamination is not existent or very low and the risk is low, then we observe where we can come to a determination that we don't think action is necessary. Or if it's something that a cleanup is very obvious, like an oil spill or something like that, we might do a removal action and go out and clean up the dirt or whatever.

However, in some cases we find that we need to do more investigation, and in that case, we might bump that site into one of our Remedial Investigation/Feasibility Studies, like was done on the TAN groundwater.

Tonight the investigations are all at the Track 1 site. The ones that we're going to be talking about were those that fell into this category. So there has already been a brief evaluation done and a preliminary determination that no action is necessary. And

so tonight we're just formalizing that and putting it out for public comment.

I will now introduce T.J. Meyer who works for EG&G, and he will be the presenter on these sites. So, T.J., take it away.

MR. MEYER: Good evening, my name is T.J. Meyer. I'm project manager for EG&G for Test Area North, and I will be discussing 31 Track 1 investigations that were completed this year and presenting the agency's recommendations for those 31 sites.

As Nolan said, Track 1 and Track 2 processes use preexisting information or information that can be obtained from the facility through process knowledge or historical records to try to evaluate the site to determine what the next recommendation or what the next decision should be for each of the sites.

There are a total of 40 Track 1 sites at TAN. We'll be talking about 31 of them tonight. The other nine, we will not be discussing. The preliminary Track 1 investigation determined that there needs to be some more investigation done at those particular sites.

The 31 sites tonight consist of 18

either former or currently inactive underground storage tanks. Most of these tanks have been excavated and removed. The site has been reestablished. I think there are three to four sites that tanks were stored remaining in the ground but they've been drained and any of the product in them now, they basically have been stabilized.

Ten of the 31 sites consist of potentially contaminated soil sites. And I say the word "potentially" because in some cases the sites were just large areas where equipment was stored and it was unknown what the condition of the site was. Some of them just looked like disturbed sites and other cases, some of the debris had been removed. That's why we use the word "potentially." In three of the sites are waste water disposal sites.

Each of these sites has had a Track 1 investigation done. And the Track 1 process has been evolving over the past three years and it consists of putting together a document similar to this one here, and I have all 31 that we're going to be talking about tonight, so if anybody has a question about any

of the ones that you read about in this plan, we can actually pull out the Track 1 document and I can show you and then you can go to the public record and research it further if you would like.

The document basically has a series of questions and tables in it where we go through and we evaluate the site and we try to compile all the historical knowledge, process information, historical site use, photographs, employee interviews to try and understand how the site was used, what the site condition was, what would have led to contamination at the site to try to evaluate it historically, and in some cases, or in all cases, we conducted a site visit to evaluate the site, and in many cases we actually collected some sampling to determine what the current site condition was.

With all that information, both the historical and the current information about the site that was compiled into a qualitative risk assessment, then the whole package was presented to the agencies for their review.

The earlier discussion today talked about the Test Area North facility. I'm going

to go over some of those major facilities again. There is the LOFT, or the Loss-of-Fluid Test Facility. The Initial Engine Test Facility, which is located up here (indicating). The Test Support Facility, which is the main facility at TAN. And then the Water Reactor Research Test Facility or WRRTF.

Shown here in -- well, it's a magenta color or purpley color -- are underground storage tanks. Each of the facilities have underground storage tanks. The tanks were there for either vehicle refueling or for emergency generator use or for boiler operations for heating the building. Shown in green are the soil contamination sites. Only the Loss-of-Fluid Test Facility and the Technical Support Facility have these potential sites present.

All of the waste water sites are located at the Water Reactor Research Test Facility. And all the water that was discharged in these ponds was the processed water or sanitary water from the facilities.

Of the 40 Track 1 sites at TAN, 23 sites were termed to have no contamination

present at them. Nine of the sites, as I mentioned earlier, require additional investigation and won't be discussed tonight. At eight of the sites, contamination was found and we conducted a risk assessment on them and the risk assessment showed that there was an acceptable level of risk.

The types of sites shown here are where contamination was found and each of the facilities had a site where some contamination was found. The types of sites can basically be grouped into two types, underground storage tank sites were sites where underground storage tank material was used or where underground storage tank sites had leaks, and then there was one site where one spill of radioactive liquid occurred.

The types of contaminants that were found were your typical petroleum hydrocarbic contaminants: benzene, toluene, ethylbenzene and xylene. And the only radionuclide detected at the one contaminated soil site was cesium-137.

The risk assessment done on this list of contaminants showed that there were two contaminants that had potential of causing

cancer, benzene and cesium-137. The risk assessment when it was completed for both of these sites showed that the potential risk at both of the sites was below the acceptable risk range, which meant there was very low likelihood for potential risk there from these contaminants.

The risk assessment for the noncarcinogenic contaminants, the ethylbenzene, toluene and xylene, on the EPA guide was below the level where it was likely that sensitive population would experience adverse health effects. In short, it's not likely that there would be any of the health effects derived from these contaminants present at the sites.

The contaminant levels are shown in the proposed plan for each of these sites, each of these eight sites, and there is a table, I believe it's on page 14, which shows the risk range of these contaminants that would have to be present at the site to cause a problem. And if you look at the proposed plan and at the different sites where contaminants were found, you will see that the contaminants detected at the site are orders of magnitude below the risk

range that is shown here on this table.

In summary, for these 31 sites the agencies are recommending no further action based on the 23 sites where the preliminary investigations, historical records and field sampling have shown no contamination is present. And for the eight sites a risk assessment has been conducted that indicate that contamination at the sites pose acceptable levels of contamination.

MR. JENSEN: We'll just go ahead and let T.J. stay here and you ask any questions that you like. Any questions for him?

AUDIENCE MEMBER: Looking at your table, what scenarios were used to determine these values?

MR. MEYERS: In the Track 1 process there is a guide document that has been put together and published and it pretty much stipulates the scenarios and the exposure routes that are presented. There is an occupational exposure route, where any of the contaminants within the first four feet are considered available to an occupational receptor. And then there is a residential scenario, and the

residential scenario basically assumes that if someone would build a house right there at that facility and take the dirt and create a basement and take the dirt down to ten feet up and spread it around their house and it would be available for both ingestion and for inhalation.

The basement scenario that you were talking about earlier where contaminants migrate from a volatile point of view was not looked at. The main reason was that these were considered the most sensitive exposure routes and that was the most sensitive -- or most likely scenario or the most reasonable scenario that was used.

AUDIENCE MEMBER: I'm noticing he is using air inhalation. In that basement scenario, a basement scenario for indoor would be a more dominant pathway than air inhalation.

MR. MEYERS: The air inhalation here is mainly, like, from an outdoor area where you would inhale soil dust into your body. The air volatilization --

AUDIENCE MEMBER: Dust inhalation?

MR. MEYERS: Yes.

AUDIENCE MEMBER: Okay. Above that is air volatilization.

MR. MEYERS: That is the next pathway.

AUDIENCE MEMBER: Well, see, it doesn't make sense for me to do it that way without including the indoor scenario, because the indoor scenario is most likely to be a dominant pathway as opposed to your outdoor scenario by, I would say, several factors of ten, a hundred, much greater. So I don't understand why you put down the air volatilization pathway but not an indoor basement scenario.

AUDIENCE MEMBER: I think it's difficult when you have risk base numbers like this -- this is -- if you notice for air volatilization and the air inhalation there are ranges presented.

AUDIENCE MEMBER: Right.

AUDIENCE MEMBER: And that is because these are sensitive to the size of the site. And I think there would be a number of other variables involved if you were going to try to come up with risk based numbers that was based on inhalation within a house. Actually EPA's risk base concentration for contaminants

are based only on ingestion, on water ingestion or soil ingestion. So this table goes a step beyond that to try to look at some of the other pathways as well.

AUDIENCE MEMBER: I agree, but my point is if you're going to do air volatilization, then Mr. Meyers said that they didn't look at indoor pathways because it was a dominant factor. I disagree that it is a dominant pathway essentially compared to outdoor volatilization pathways.

AUDIENCE MEMBER: Depending on route of entry into the house, you have less pollution.

MR. MEYER: Yeah. It's like radon, your concentrations are going to be much higher indoors than they will be outdoors. And that is probably an important pathway essentially since you have fairly low risk base acceptable values for your outdoor, I would expect your indoor to be even more conservative.

AUDIENCE MEMBER: That's a good point.

MR. MEYER: I guess it's hard for me to remember three or four years ago when they

were setting up this Track 1 risk assessment process. But it really -- it came down to how do you take a contaminant level that is in the soil, you can detect a sample and then say how much of that is going to get into a particular basement in a house. It was just beyond the ability or the attempt here in this Track 1 investigation to do that level of monitoring.

AUDIENCE MEMBER: But doesn't EPA have guidelines for that? Doesn't RAGS do models or indoor basement determination of concentration?

MR. MEYER: Not specifically that I'm aware of. The modeling that I'm aware of is done mostly just for ingestion of soil or drinking water standards. They might have specifically done something like you're mentioning with the radon concerns. They might have some models along that line, but I'm not aware of that list of chemicals that we've done modeling on, but then, again, I'm not a risk analysis person for EPA either. I could check with somebody specifically and get back to you on that if that would be helpful.

MR. STORMBERG: I think there are

ways of addressing indoor models. And some sites at INEL, for example the organic contamination in the vadose zone at the RWMC, they did look at some indoor modeling for volatiles as well, but again, that was a remedial investigation and a much more intensive level of investigation than for these Track 1.

MR. MEYER: I think that might be one point to bring out, Jeff, is that these were really just the beginning process to look at it as a site, and most of the sites no contaminants were found. And in many of the sites where there is contamination that's elevated, they've gone up to the next level for further investigation, further evaluation.

These sites here, you know, when you look at the contaminant levels, they are in the sub/part-per-million range.

AUDIENCE MEMBER: My point still stands that perhaps that's a pathway that you should be looking at since I think it's more of a dominant pathway than air volatilization.

MR. JENSEN: Would you restate that as a comment when we get there? That really is a comment.

Any other questions that we have? None, okay.

Let's go ahead and do the comment period then. Same format as before, if you please stand up and state your name so that the court reporter can get your name and also speak loudly. And after the comment period, these folks will be around; for a specific question, you can talk to them one on one.

So is there anyone who would like to comment? Yes, Mr. White.

MR. WHITE: C.E. White. I can't agree totally with my friend over here about the house basement, what have you. Most of the contamination -- I'm even going as far as to say all of the contamination that was found on the ground or in that area, was not of a very deep nature. It was probably above four or five feet. Therefore, if you go down into the ground, you're not creating a dominant path, I don't think.

I think your more dominant path is the way it's looked at because you're living in Idaho, and if you live in Idaho, you've got the wind. And this is going to be the greatest, I

think, path of contaminant would be from the surface areas that would be stirred up by the wind or whatever. I can't -- I agree with most of your other things, but I can't with that.

MR. MEYER: I can talk to you about that.

MR. JENSEN: Just to keep this process pure, are you done with your comment?

MR. WHITE: Yeah.

MR. JENSEN: If you want to comment go ahead and give your name.

MR. NOVAK: My name is Steve Novak. I feel that the indoor pathway should be addressed as well as the outdoor pathway. For several reasons. And I'll address Mr. White's comments. The fact that there is a lot of wind in Idaho probably decreases the outdoor pathway even more, because the concentration on the outdoor pathway most likely would be lower due to the fact that there is high wind, fresh air will bring and move contaminants away.

As far as the basement scenario, contaminants not only go through the basement they go through the walls and the sides of the basement as well. So, usually, contamination

anywhere from one to ten feet was a concern when you have a basement because it gets sucked into the basement in the pressure through the outside and the basement. There is a large concern of radon. It's also a concern of volatiles: benzene, toluene, ethylbenzene, especially benzene which is more toxic than the other contaminants.

MR. JENSEN: Thank you. By the way as you noticed. We don't respond during your comments. We just let you speak your piece without commenting on those.

Any other comments tonight? Okay.

I'll go ahead and close this formal comment period then. Again, thank you very much for coming and remember again, comment period doesn't close until June 17, so you can submit the things in writing anytime during that period. And folks will stay around if you want to talk to them one on one. Thanks, again, for coming. Folks, if you want to give us an evaluation on our meeting tonight, please do so.

(The hearing concluded at 8:30 p.m.)

REPORTER'S CERTIFICATE

STATE OF IDAHO)
) ss.
County of Ada)

I, NANCY SCHWARTZ, a Notary Public in and for the State of Idaho, do hereby certify:

That said hearing was taken down by me in shorthand at the time and place therein named and thereafter reduced to computer type, and that the foregoing transcript contains a true and correct record of the said hearing, all done to the best of my skill and ability.

I further certify that I have no interest in the event of the action.

WITNESS my hand and seal this 18th day of June, 1994.

Nancy Schwartz, Notary Public in and for the State of Idaho

My commission expires:
November 5, 1996

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Look-See Concordance Report

- - -

UNIQUE WORDS: **1,346**
TOTAL OCCURRENCES: **4,166**
NOISE WORDS: **385**
TOTAL WORDS IN FILE: **11,076**

- - -

SINGLE FILE CONCORDANCE

- - -

CASE SENSITIVE

- - -

NOISE WORD LIST(S): **NOISE.NOI**

- - -

INCLUDES ALL TEXT OCCURRENCES

- - -

IGNORES PURE NUMBERS

- - -

WORD RANGES @ BOTTOM OF PAGE

– Q –

– R –

– S –