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SOURCE AREAS REMEDIAL DESIGN
PUBLIC BRIEFING TRANSCRIPT
The Former Memphis Depot
May 10, 2007
1620 Marjorie Street
Memphis, Tennessee

The Source Areas Remedial Design Public Briefing for the Former Memphis Depot was held at 6:00 p.m. on May 10, 2007 at the Ruth Tate Senior Center located at 1620 Marjorie Street, Memphis, Tennessee. The attendance list is attached.

WELCOME AND INTRODUCTION:

MR. DOBBS: Good evening and welcome. My name is Michael Dobbs. Some of y'all may know me. On behalf of the Defense Logistics Agency (DLA), I would like to welcome you to tonight's presentation regarding this Remedial Design for the Source Areas at Dunn Field.

Tonight you'll be given a presentation of the design. We'll take questions, with points of clarification pertaining to the presentation after the presentation is given. Should you have questions other than of tonight's presentation, hold them until after the meeting, and we'll discuss them later with the technical team behind me. We have one presentation tonight that will be provided by Mr. David Nelson from CH2M Hill. With that, David.

MR. NELSON: As Mike said my name is David Nelson. I'm a Project Manager with CH2M Hill, and I will be discussing the Source Areas Remedial Design. CH2M Hill is the Remedial Design contractor for the Memphis Depot project, and we work with DLA and the other members of the BRAC (Base Realignment and Closure) team, which is TDEC (Tennessee Department of Environment and Conservation) and EPA (Environmental Protection Agency) Region 4.

The Remedial Action contractor is e^2M, and the representative here tonight is Tom Holmes.

You may be aware that the Memphis Depot -- the environmental aspects operate under the CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) process, which is a federal law; and the CERCLA process has key decision-making stages. And there are several that have been completed, and these up here on this slide here are actually in the Remedial Design stage. And the Remedial Design for Dunn Field of the Memphis Depot has been divided into three phases: The Disposal Sites, which has been completed, and the Source Areas, which we are discussing this evening, and the Off-Depot Groundwater.

Just a little bit of background on this project. The final Record of Decision or ROD for Dunn Field was completed in April of 2004. Now, the ROD specifies remedies for soil and groundwater. In this case where the Source Areas are, the remedies are: Thermal-enhanced Soil Vapor Extraction;

Limited Excavation, Transportation and Off-site Disposal. Another term for that is Dig and Haul. That's probably the words I will use. There's also Zero-Valent Iron injection within groundwater, and then also Land Use Controls for the soil and groundwater. In the presentation we'll go through and describe these briefly.

A little additional background for Dunn Field: The Source Areas RD was completed last month. And if I'm in your way I'm sorry. It was completed last month, and it was reviewed and approved by EPA and TDEC. As part of the completion of the Remedial Design and progress into the Remedial Action, a public briefing is required, which is what we're doing this evening. This public briefing is composed of discussion of the schedule of the activities surrounding the Remedial Action, and then potential impacts, such as traffic disruptions, health and safety requirements that are associated with this construction.

There are several objectives that are described in the Source Areas RD document. The subsurface soil -- subsurface soil includes reducing the chlorinated volatile organic compounds (CVOCs) which are present in the soil to levels that would prevent potential future exposure to industrial workers should a building be built on them. The property is zoned as light industrial.

They would also -- for subsurface soils the objective is to reduce or eliminate further impact to the shallow groundwater from CVOCs, which are present in the soil. And then groundwater, the objectives for groundwater are the Land Use Controls, which are currently in place. We also -- or we restore groundwater to drinking quality to be protective of the Memphis Sand aquifer, and then also to prevent further off-site migration of groundwater containing CVOCs that exceed protective target levels.

In the process of developing the Remedial Design, we conducted several investigations. These investigations consisted of the Soil Vapor Extraction Treatability Study or SVE Treatability Study where we define the optimal SVE well locations that include spacing between each well as well as the size of the treatment system to remove contaminants.

That was followed by the ZVI or Zero-Valent Iron Treatability Study, which again, helps us define the optimal ZVI injection location spacing and the mass of iron that's required to treat the groundwater.

And the most recent investigation consisted of -- it was Remedial Design Investigation in name, and it consisted of basically refining the size of the treatment areas for the Source Areas. All that data that was generated during these investigations are included in the Source Areas RD, which is available in the Information Repositories for the Memphis Depot.

Now, the Remedial Action for the Remedial Design is going to be implemented in several phases. These phases consist of, first, the Fluvial SVE (Soil Vapor Extraction) system. Following that, while the Fluvial SVE

system is working, would be a limited Dig and Haul. And then after that's over, an installation of a Thermal-enhancement to the SVE system. And then the last phase is the installation or injection of Zero-Valent Iron.

Before we can actually go out in the field to do the Remedial Action, we have to write a Work Plan. That's just part of the CERCLA process. We're following along on that.

Each Work Plan -- and, actually, there are two Work Plans for the Source Areas. There is the Fluvial SVE Work Plan, in process now, and then there is another, a Loess/Groundwater Work Plan, which is in the preliminary stages at this time. But each Work Plan is reviewed by EPA and TDEC, and before we can actually do anything, it has to be approved by those organizations. The Work Plans consist of construction drawings and treatment -- description of the treatment areas, assembly points for equipment, work procedures that will be followed. It also describes a groundwater monitoring plan, and, importantly, a health and safety plan for air monitoring, protection of the workers and the community, as well as overall cleaning protocol for the equipment. Again, these Work Plans just as the RD are available in the Information Repositories.

So, let's take a look at the Remedial Action. The Remedial Actions are going to occur on the western part of Dunn Field. There is actually another -- kind of slice of Dunn Field and certain portions, but this will all take place on the western side -- actually, the northwestern area of Dunn Field. And there will be four different treatment areas. These treatment areas were defined during the investigation process and are described in the Remedial Design.

Now, just as a point of reference, this is the western perimeter of Dunn Field. This is Menager Avenue, Kyle Street, and there's the Burlington-Northern railroad track. (Indicating)

As described in the previous slide, the first action is the Fluvial SVE. The Fluvial SVE is basically extraction of air from soil from the subsurface. That air is pulled out by these -- blowers is what they're called. They just basically extract air, and while they're doing that, they pull out the CVOCs from the ground. And that air is removed from the ground is treated with activated carbons, which remove the CVOCs from the air, and then that air is released into the atmosphere. It's clean, and then actually we plan on monitoring. It's part of the Remedial Action -- sampling the air to ensure we are in compliance with the Clean Air Act requirements.

If any condensate develops or, in other words, water is pulled out of the air, it will be transferred to the sanitary sewer system via the existing groundwater extraction system that is on Dunn Field and operating at this time. The SVE system will include construction and placement of a fenced treatment compound. And, actually, the treatment compound consists of really just a large trailer, and it's being built off site, and then it's hauled to Dunn Field and placed on the ground. At the same time, there will be installation of seven SVE wells and ten monitoring points or vapor

monitoring points, all to ensure compliance of the system. And then finally there is, of course, conveyance piping that goes from each individual well back to the treatment compound. All of the work will occur on Dunn Field in those areas that we previously defined. And we anticipate operating the system for approximately five years.

In your handout there is this map. It may be a little easier to see in your handouts. This is -- again, we're on the western side of Dunn Field, and there is that road that I was speaking of earlier, and you can see there are seven points. Those are the seven SVE wells that we installed. And this blue line is the conveyance piping that will convey back over to the control building, the treatment compound. (Indicating)

Now, to ensure that the SVE system is doing what we said it would do in the Remedial Design, we conduct performance monitoring; and, actually, performance monitoring is done for each of these Remedial Actions. We'll describe them in here. Performance monitoring consists of a baseline groundwater sampling event. They're also monitoring the vacuum influence and making sure that the described vacuum that we need to pull air out of the ground is conducted as we said.

The sampling of the extracted air: again to ensure compliance from the Clean Air Act, is making sure that we're treating the air to the prescribed levels. And then we also will be conducting ambient air monitoring. Again, that ensures the proper operation of the Fluvial SVE system, and, you know, it helps protect the workers as well as the community.

And then finally, once the Remedial Action -- once the SVE system with all our monitoring, we believe that it's reached its Remedial Action objective, we'll conduct soil sampling or collect soil samples to confirm our data.

Following the SVE system -- while the SVE system is actually installed and operating, we will be conducting this Dig and Haul. The Dig and Haul is the removal of about 150 cubic yards of soil that are, in fact, impacted by CVOCs. And this is actually -- 150 cubic yards is about a 20 (foot) by 20 (foot) area.

During the excavation we'll perform air monitoring, again, for the protection of the workers as well as the surrounding community. And then the soil is placed into trucks and transported off site to a CERCLA approved facility.

Now, the performance monitoring for the Dig and Haul -- once you get down to the prescribed depth, you collect soil samples again to make sure that you have reached the target or remedial goals, and if that is the case, then you're finished with your digging effort. If not, then we excavate a little bit more. But then it's all back filled with clean soil, and the project is essentially finished at that time. In your handouts again there is another map. The area is outlined by this circle but -- you know, 20 by 20, at this scale, is within that circle.

Now, the third phase of the Remedial Action implementation is the installation of this Thermal-enhanced SVE. We still plan on extracting air from the ground, from the subsurface soil, but this time we're going to heat the soil at the same time, and the heating will be performed by the installation of about 200 wells. They also serve as electrodes. The heating is monitored by installation of about 20 points of basically temperature probes, and we anticipate that this system will operate for about a year.

Again, there is another map which you can reference in your handouts, but each of these areas has a little flag beside it, and that's a little blue line there. That's the area where the Thermal-enhanced SVE will be installed and performed. The map also shows the Dig and Haul area right here on the northwest side of Dunn Field, and then also the treatment compound for the SVE system will be sitting right there. (Indicating)

Again, just like the Fluvial SVE system, we'll be doing performance monitoring, and they're actually very similar. Monitoring -- except, you know, we're adding soil temperature with the thermal enhancement. We've got to make sure that the soil is heating up to the proper temperature. So we'll monitor that soil temperature. Again, we monitor vacuum influence, making sure that we're pulling enough vacuums -- pulling those vapors out of the soil.

Now, we will sample the extracted air, just as we will do for the Fluvial SVE system. We monitor ambient air, again, to make sure that our treatment systems are cleaning the air and safe for the workers and the community. And near the end -- or actually during and near the end of the Thermal-enhanced system we'll sample groundwater. That evaluates the overall effectiveness of the SVE systems, but it also helps us move into the next phase, which is refining the Zero-Valent Iron injection locations. And then finally, like we will do for the Fluvial SVE system, once we reach what we believe to be the remedial goals, we'll go back and sample the soil to confirm that that indeed is the case, that we have achieved the remedial goal.

And then the last page of the Remedial Action is the Zero-Valent Iron injection effort. If you've been to any of the meetings previously or are familiar with the Memphis Depot, you may have seen the mention of the Zero-Valent Iron. Zero-Valent Iron essentially is an iron powder that is injected, and it's used to treat groundwater within the Fluvial aquifer, and essentially what it's doing is it breaks down the CVOCs.

The groundwater sampling will be performed, as I said in the previous slide, near the end of the -- well, actually -- I'm sorry -- during and near the end of the Thermal-enhanced SVE system to optimize the ZVI injection location, and make sure that they're going to remove as much CVOCs as possible. We'll inject approximately 180 tons of iron through approximately 44 locations.

You have this handout also. The little red dots in your green areas are where the ZVIs are proposed at this time. Again, this is all within the soil treatment

areas we defined back in the previous slides. I also note that these all occur in the same area. Most of your thermal-enhancement is all tied in with the same area.

And, of course, as we've done for the other Remedial Action phases, we'll be doing some performance monitoring. During the actual injection we'll monitor the pressure of the injection. We'll monitor the flow rate of the iron entering into the aquifer, and then the total ZVI or Zero-Valent Iron that's injected into the aquifer itself.

After the ZVI has been injected, we'll go back and perform borings down to the aquifer and look for the ZVI. Potentially, what we're trying to determine is how well it is distributed. That tells us, you know, how effective we are going to be. And along with that, we perform groundwater sampling. Right now the groundwater sampling is scheduled quarterly for a year following these ZVI injections. If the data indicates that additional injection of ZVI is warranted, there will be an additional period of monitoring of the section in there.

Okay. So, the project scheduling: Since, we are pretty much in the spring of 2007, it's almost summer now -- it feels like it outside today -- we are preparing the site. There has been some action. If you have been past Dunn Field, you may have seen some equipment out there, and it's preparation of the site for this action, and we're in the preliminary phase. It's actually the logistical stage of ordering and purchasing and setting up the equipment for the Fluvial SVE. Most of that is actually done off site at various venues, but like I said, we'll be trucking that equipment to Dunn Field.

And then in the fall of 2007, as I said, there is another RA Work Plan which describes the Thermal-enhanced SVE system and Zero-Valent Iron injections, and that has been written. It's being reviewed, and approval is expected I think in the summer. I may have that wrong, but it's in there -- by the fall that will be completed. By then we will do the Dig and Haul job and then construct the Thermal-enhanced SVE system.

Then in 2008 we plan on operating and maintaining the Fluvial SVE system. Actually, that goes on until about the 2012 time frame. We also complete the Thermal-enhanced SVE construction, and actually we'll complete the overall remediation using the Thermal-enhanced SVE system. Then we plan on collecting confirmatory soil samples and then finally collect groundwater samples which will validate -- not validate -- but optimize the ZVI locations.

In 2009 we actually begin the Zero-Valent Iron injections, and then in 2010, once the ZVI injection effort is over, we plan on collecting confirmatory groundwater samples and then requesting and receiving from EPA our Operating Properly and Successfully (OPS) determination.

In 2011, like I said, we'll be still maintaining that SVE system in the Fluvial sands, and then in 2012 our plan is to collect confirmatory soil samples for the Fluvial system, and then switching that system off, as well as 2012, and

then also the CERCLA process includes conducting five-year reviews, and that will be in 2012.

And that concludes the description of the source areas Remedial Design.

Does anybody have any points of clarification?

MR. WILLIAMS: Yes.

MR. NELSON: Are we supposed to use the microphone?

MS. MOORE: Yes.

MR. NELSON: Oh, we are? Okay.

MS. MOORE: State your name first, please.

MR. WILLIAMS: Mondell Williams. Just a point of clarity. Will we be using two different processes at one time, that's injecting -- field injecting the Zero-Valent Iron into the ground and then we're going to still do the thermal treatment? Are we doing both of them at the same time or one or the other?

MR. NELSON: The Thermal-enhanced SVE comes first, and once it's complete and we monitor the groundwater for a period there, then the ZVI follows that groundwater monitoring period.

MR. WILLIAMS: Okay. At one process we were doing the Zero-Valent Iron injection into the ground. Am I right? That was the ---

MR. NELSON: That was part ---

MR. WILLIAMS: --- previous ---

MR. NELSON: That was part of the -- well, we used that in a couple of efforts. We've used it as a Treatability Study. Then we had an action off of Dunn Field where we used Zero-Valent Iron.

MR. WILLIAMS: So, what would make us think that the thermal heating will work? Do we have any test models or anywhere else that has performed this operation and they had a good reply of what had gone on?

MR. NELSON: Well, it has not been used on Dunn Field, but it has been used successfully at a number of other sites with similar CVOCs as what's on Dunn Field.

MR. WILLIAMS: Okay, and one last question. In hauling the dirt and stuff, will it be covered? The last time they did a lot of hauling, a lot of residents complained about the dust flying all over, you know.

MR. NELSON: Well ---

MR. WILLIAMS: And ---

MR. NELSON: I'm sorry. Go ahead.

MR. WILLIAMS: Go ahead.

MR. NELSON: One of the things -- if there is dry conditions and we're generating any dust at all, e^2M will water down the soil, and all the trucks will have -- actually what

they are using are roll-off boxes that have covers. They can be fastened on the top of the roll-off box.

MR. WILLIAMS: And in one of the handouts you showed that you'd be doing the monitoring quarterly, but is this going to be seasonal? Is it a seasonal thing where it might -- in the summertime it might -- the chemical process might be a lot higher than it does in the summertime -- I mean, in the wintertime? Or what is this the -- you know, you're just monitoring it quarterly or you have a reason, you know, behind it?

MR. NELSON: Well, I guess, groundwater is I guess the most frequent -- unless you have rapidly changing conditions, you really, you know -- and we really don't see any seasonal difference in the Dunn Field area. So, I guess the most reliable frequency is quarterly. Like I said, there really isn't any -- we don't really have any large scale changes in the groundwater levels.

MR. WILLIAMS: Well, anyway, I see that you've got a lot of monitoring wells going in a certain area on Dunn Field. So my point is, are you sure that this is the path of what you're trying to track or this is just a search and see thing?

MR. NELSON: If you ---

MR. WILLIAMS: Yeah, right in there. I was just wondering. You've got your monitoring wells there so ---

MR. NELSON: These are actually -- these are actually one-time borings ---

MR. WILLIAMS: Okay.

MR. NELSON: --- with no monitoring. We actually have a -- there is actually a number of monitoring wells out there now, and there will be a few additional wells installed just to optimize the ZVI locations, but these 44 locations that are up there are just one-time injection borings, and once they are done, they're grounded to surfacing. That's it.

MR. WILLIAMS: Thank you.

MS. PETERS: I want to ask a question.

MR. NELSON: Okay.

MS. PETERS: I'm Johnnie Mae Peters, and I want to know, after these about ten years, will the quality of the water -- like if somebody is going to build a building, would it be up to the drinking water or how would they get their water? You know, once you build a building, you've got to have some drinking water coming from somewhere.

MR. NELSON: Well, again, all this is being done and all the action is centered on remedial goals, and this remedial goal is for the Fluvial aquifer, and the Fluvial aquifer really doesn't represent -- or it actually is not drinking water for the City of Memphis. So, we're cleaning up the groundwater to remedial goals to be protective of the Memphis Sand aquifer, which is where the majority or actually all the drinking water comes from for the City of Memphis.

MS. PETERS: So, that means that we have to go down a couple of --

MR. NELSON: Well ---

MS. PETERS: --- so many thousand feet or something to pass by Dunn Field, because Dunn Field was a big hole. They didn't dig that hole. That hole was there.

MR. NELSON: Yeah, but ---

MS. PETERS: And they filled it up.

MR. NELSON: The Memphis Sand aquifer actually -- I don't know the actual locations where they extract water, but I do know the Memphis Sand aquifer is about 500 feet below the surface, and what we're talking about is about 90 feet below the surface. So ---

MR. HOLMES: David -- Tom Holmes with e^2M. The water that somebody would get if they build a building on Dunn Field would be from Memphis Light, Gas & Water. I mean, nobody's going to be installing a well to get drinking water in Dunn Field. The water would be provided by the City of Memphis.

MS. PETERS: Yeah, but you've got to -- if you want to put a building on a site, you've got to dig down in the ground far enough to get the water. It ain't just sitting up there waiting on you to put a pipe on it and get the water.

MR. HOLMES: They would dig a trench for piping to lay -- to lay pipe, but they wouldn't go down to the water at the building location.

MR. WILLIAMS: Just to -- she was talking about the wells and stuff. We just said like that -- okay, we've got so many pumping stations already in this area, pumping stations that supply the water for this neighborhood. Let's see. They're in like 120 or 140 or 150. These are the numbers to these pumping wells that's in these areas. So, I'm just going to assume she was asking that if you all are digging the wells and punching holes in the ground, at some point will the water be sucked up through these pumping stations that the City of Memphis already have out there pumping water -- the fresh water up for residents? I think she -- that's where she I think ---

MS. PETERS: See, once they had a contaminated well.

MR. WILLIAMS: Right.

MS. PETERS: And that contaminated well -- they told me was 80 or something wells running a day. They done put that -- used that contaminated well, and it wouldn't make no difference because it's so many million waters. Now, I know they was discussing this water business once before with a contaminated well.

MR. WILLIAMS: I think she's talking about EPA and, you know, setting the standards to the amount of chemicals that can be in the water where, you know, it won't affect the residents or anything like that. I think that's what she's talking about but ---

MR. TRUITT: Let me make a point of clarification that -- I've said this in previous meetings. Memphis Light, Gas & Water has a strict prohibition against digging down for water. You've got to buy the water from them. You can't even get a permit to dig a well. Like the beer manufacturers came, they had to buy water from Memphis Light, Gas & Water, but they can't -- you can't dig a well in Shelby County. There is a strict law prohibiting that. So, nobody is going to dig down to the Memphis Sand on their own.

MR. NELSON: That's correct.

MR. WILLIAMS: I don't think she said nobody was digging. I don't think she said no one was digging. We was talking about the existing wells that's already -- it's in place. You know if anything would affect those wells. We wouldn't think -- I don't think she was talking about digging, I don't -- you know, I don't think.

MS. PETERS: I wasn't talking about digging no well. I'm talking about they have had a contaminated well in this area, and I talked to Light, Gas & Water -- this has been some years ago -- and they said with them running them 80 wells at the time, it wouldn't really matter about that one well because of the fact by the time you mentioned the 80 other wells, it wouldn't affect your body or nothing. That's the way they tried to explain it, because they had a contaminated well. Didn't you say that?

MR. NELSON: I think Mr. Ballard from EPA can maybe shed some light on it. If there are no other points of clarification ---

MR. BALLARD: Turpin Ballard with EPA.

MS. MOORE: Turn it on. (Indicating microphone)

MR. BALLARD: Turpin Ballard with EPA. I think I understand the comment that you're making, and it's not uncommon for a public water supply in a city of this size to have some wells with contamination in them. And the water from the individual wells would not necessarily meet the EPA cleanup standards, but they're required to meet that standard at the point of distribution of the water, not in the ground. So, they can take the combined water from all of those wells that they're pumping, and as long as the combined mixture meets the standard, they can distribute that water, basically dissolution. But it's -- the comment is sort of, you know, a little bit 90 degrees or sideways from where we're -- what we're talking about tonight because of Memphis drawing its water from a completely different aquifer than where our contamination is located. We're just trying to treat the contamination that's in the shallow aquifer down to drinking water standards so that it wouldn't sometime in the future make its way down into the deeper aquifer where Memphis draws its water.

MR. TYLER: Good evening. Stanley Tyler. I noticed that you've removed 150 yards of cubic dirt at this late a date. Was there an urgent reason for doing this? Because this field has been tested before and supposedly supposed to be somewhat clean or ready to go.

MR. NELSON: Well, actually, we considered treating this area with this Thermal-enhanced SVE system. Most of that contaminated -- most of the CVOCs in the soil -- in the subsurface soil are about 5 feet down to somewhere around 30, 35 feet, but this area is relatively shallow. It's about 5 feet to 10 feet, and it's a smaller area, and because of the overall cost of installing this system, it just seemed -- it's a lot quicker and a lot less expensive to just excavate and haul it out versus going through the rigmarole, and including money, for that small area.

MR. TYLER: And, now, that area was considerably hot; correct? That's why you had to remove the dirt.

MR. NELSON: Well, it hasn't been removed yet, and the CVOC levels are similar to what are in these other treatment areas.

MR. TYLER: Okay, and so you decided that since it was a smaller area contained there, it would be better to do that rather than try and treat the whole area that way?

MR. NELSON: Well, you know, all our soil sampling in these areas show that that one small area has CVOCs above remedial goals, and again, because of the expense associated with it, it's easier to just dig it out and haul it out.

MR. TYLER: So, the whole vast area that was just one of the hottest points. So, in other words, the other vast area is a little bit at EPA or a little lower, and it can be treated by the traditional methods that you're talking about; correct?

MR. NELSON: Well, again, the area to be excavated has about the same contaminant concentration levels, and essentially what they are is they're above the remedial goals. All these defined areas and subsurface soil depths are above the remedial goals.

MR. TYLER: Another question. As you know, these methods have been proven other places; correct?

MR. NELSON: Uh-huh.

MR. TYLER: Okay. Now, I'm a Plan B and C kind of guy, and I'm not grandstanding. I always ask the same question. We had a Plan A once upon a time, and then we ran the data, and so let's back it up and try Plan B. And I notice there's a disclaimer at the bottom of most of your slides: "Projection dates are based on current information and may be subject to change."

Will the public be informed of the changes, and will we be allowed to have a public meeting so that we can inform the public that "We tried Plan A and that quite didn't work out, and then we tried Plan B, that didn't quite meet our goals. Now we want to have Plan C"? We want to bring the public in and say, "Okay, Plan A was thought about and data suggested that this would work, and then maybe that's not the best cost effective way to do it, and then Plan B comes up and says, well, we've got enough data to make an informed decision." And you say, "Well, this may not be."

And what I'm concerned about is that the public needs to know when something is subject to change in advance. It may be minor or it may not be

minor, but we're talking about public confidence, and if there are any changes in the midstream, people always think the worst, which I know sometimes, you know, data will say one thing and then you read something else.

So, I'm just concerned that we're now going to Plan B, that we do have adequate Plan C and the public has an opportunity to hear it and see where it's been used before so we can all stay on the same team.

MR. NELSON: Right, and if there is any change in the remedy, approach to the remedy, et cetera, it does require (unintelligible) or public communications.

MR. TYLER: Now, this Zero-Valent Iron, is that 150 tons?

MR. NELSON: One hundred eighty tons actually.

MR. TYLER: One hundred eighty tons.

MR. NELSON: Uh-huh.

MR. TYLER: All right.

MR. NELSON: That's about -- actually, this Zero-Valent Iron comes -- you know, it's shipped to the site in about two-ton bags. So you'd end up with about 90 bags of this material, and it is powder form. It is very small.

MR. TYLER: And it will not react with any of the cancer causing agents that's permanently in the ground now?

MR. HOLMES: Yes, it will.

MR. TYLER: I'm talking about in a bad way.

MR. HOLMES: No.

MR. NELSON: No.

MR. HOLMES: In a good way.

MR. TYLER: Okay. That's what we want to know. That's what we're trying -- this public hearing is for. You know, things react. It can either react good or it can react bad, and that's what we want to know. When you have got that much material put in the ground somewhere, say, well, you hope for a positive effect.

MR. NELSON: This and ---

MR. TYLER: And ---

MR. NELSON: In this case, it is a positive effect by reducing or breaking down the CVOCs.

MR. TYLER: Okay. We have the data in place to state that this iron or this reaction is a positive force?

MR. NELSON: Yes. We -- through our Treatability Study which was conducted on Dunn Field, as well as the other actions we've made, and then ZVI is used actually across the nation on other sites similar to this.

MR. TYLER: All right. Now, as you know, you guys have an ambitious schedule.

MR. NELSON: Uh-huh.

MR. TYLER: And that requires collecting a lot of data and interpreting a lot of data. And as I said before, I know everybody is concerned about cost effectiveness and time. So I would hope that we exercise caution before we go full speed ahead with all these planned activities. Because this is an ambitious schedule, and the public is looking. We want to do it right. We want to do it safe, but we want to do it in a timely manner so that in case there is a buckle on anybody's part, we have time to regroup and straighten it out. Do we have like a backup schedule to this one or this is just a set-in-stone schedule?

MR. NELSON: Well, I wouldn't say everything is set in stone. You know, there are days built into the schedule that allow for consideration of the data. The data evaluation process runs concurrently with the Remedial Action, and the data is validated by e^2M and then presented to the BCT (Base Realignment and Closure Cleanup Team) for their review, and the BCT has a third organization which performs the validation of the data as well.

MR. TYLER: And who is the -- I trust that you're going to do it correctly, but who is the like trust -- who is the verification -- independent verification? Is that built into this data?

MR. NELSON: Yeah, that's the third organization there. Their name is Noblis, and they perform independent validation of the data.

MR. TYLER: On all the data you collect or just certain data?

MR. NELSON: All the data that's collected and that will be presented by e^2M for the Remedial Action.

MR. TYLER: Okay. Now, I see by 2012 you will be turning it off and conducting a Five-Year Review. What will you base your Five-Year Review on when you turn the machine off?

MR. NELSON: Well, there is a standard protocol for Five-Year Reviews that has been developed by EPA, and those documents are required at certain, I guess, site descriptions and other things that -- basically a comprehensive review of the Remedial Action as well as the site in general.

MR. TYLER: And will it be put in the repository or will it be a public hearing like, you know, "We've collected all this data, and we turned the machine off, and this will be collected. This is why we're turning it off"? So, it's like some of the people in the neighborhood might say, okay, "Well, it's cleaned up. We've turned the machine off. This is why we turned it off. This is how we turned it off, and this is what we think will happen in the future." Will there be like a public hearing or forum for people to know why you turned it off?

MR. NELSON: Well, anytime a Remedial Action is complete, there is a public meeting held to present the final findings of the completion effort, and it explains why the system was turned off. And in this case it would be we've met the remedial goals, and the data is backed up by a report. And the Five-Year Review

actually runs independently of that. That's a -- it actually will continue on once these Remedial Actions are complete.

MR. TYLER: All right. One last question. If you have a website addresses of where all this testing has been done, could you forward that to Alma? And I'll have her forward it to me so I can get on the internet and take a look at some of this here so we can -- in case we go to Plan C, I'll have a somewhat idea of what Plan C looks like. Thank you.

MR. NELSON: Okay. Yes.

MS BOYD: Yes. Similar to his -- will there be any future health hazard?

MS. ALMA: If you would, state your name, please.

MS. BOYD: I'm Geneva Boyd, and I was concerned about will there be any future health hazard to the residents that live in the area.

MR. NELSON: Well, the Remedial Actions have a number of safeguards. There's the performance monitoring that we spoke of. We monitor during the Remedial Actions to ensure the community and really the workers that are present around these systems are safe as well as the surrounding community. And the objectives of these Remedial Actions are to reach the remedial goals. These are health-based standards that have been set and approved by -- reviewed through TDEC and EPA.

MR. BALLARD: Turpin Ballard again. I just want to address a couple of Mr. Tyler's comments about -- first of all about Plan A, B, C, and also the issue -- the question of Five-Year Reviews -- to clarify about Five-Year Reviews.

The Source Areas are still on Plan A. We haven't gone on to Plan B yet. The Record of Decision in 2004 calls for excavation and treatment of the Disposal Areas -- that's been done -- of the burial pits. That's been done.

Then the second portion of the overall Dunn Field remedy which is occurring on Dunn Field, that is the cleanup of the soil from the volatile organic compounds contamination, the stuff which is contaminating the groundwater, we're doing that in these, you know, two phases because we have two different types of soil that are contaminated. The top 30 feet is very clay rich, and it holds a lot of the material in it. It trickles it out into the sand and gravel underneath it, and that trickles down into the groundwater.

So, the first phase -- and this is still on Plan A. The first part of this action we're taking is to get the Fluvial Soil Vapor Extraction system in to keep that contamination from going to the groundwater, just cut it off. That's the whole -- that's sort of the ongoing five-year part of the project.

The Record of Decision specified Soil Vapor Extraction for the entire surface down to the water table and allowed as how there may be some need for enhancement of Soil Vapor Extraction in that top layer because of their clay rich nature. So, what David has presented here tonight with this Thermal-enhanced Soil Vapor Extraction is implementing -- we've determined during design that it would be cost effective and faster and we'd

end up with a better result if we implemented this thermal-enhancement. Doesn't mean it's going to be cheaper by being cost effective, but it's a time and cost thing.

So, we'll actually have that contamination out of the ground before we're done with the traditional standard Soil Vapor Extraction that's going on in the sand and gravel. But again, this is all part of -- for the Dunn Field portion of this remedy, this is all part of Plan A. Okay. That's kind of what I wanted to say about A-B-C.

To address the issue of the Five-Year Review, it's a requirement of the Superfund law, also acronymed up here, it's CERCLA, that when you leave contamination in place as part of a remedy such that the site is not available for an unrestricted use and unlimited exposure, walk-away-from, then you have to review that remedy every five years to ensure that the remedy is protective or remains protective.

The eastern part of Dunn Field was found to not have sufficient contamination on it to require a remedy. That's why it was able to be transferred this past year and sold, and it's available for unlimited use, unrestricted exposure. We will not have -- basically be saying, "You can't do these kinds of things there." That would be all up to any locals only or anything like that. It's really technically -- legally it's no longer part of the Superfund site. The site is where the contamination is that needs you to do something about it.

So, every five years though on the Main Installation and on this western part of Dunn Field we'll be conducting a Five-Year Review. The Five-Year Review isn't about just this little bit of it. It takes a look at all the remedies on the site.

We're actually starting the Five-Year Review next month, and we're expecting to publish -- by law, we're supposed to publish it in January of next year, because the last Five-Year Review occurred in January five years ago, 2003. In 2012 we'll be starting the Five-Year Review that we will be required to publish by January 2013. That's where the Five-Year Review process comes in. It's not specific to an individual remedy. It's triggered by the first remedy, which was the Interim Remedial Action that we have ongoing at Dunn Field, the groundwater pump and dump -- or pump and treat I should say -- pump and discharge to the city treatment system. So, anyway, that's where the Five-Year Review process comes in.

MR. WILLIAMS: During the Process of A, B, and C, I don't -- like, Mr. Ballard said, okay, I don't think that the process has changed but the procedures have changed. I think that's where the A, B, and C -- I think that Mr. Tyler was talking about. I know we're still going through the same process, but we don't have the same procedures that we're using to treat what we're trying to treat.

MR. BALLARD: I would disagree.

MR. WILLIAMS: Well, the reason I said that is because we used -- we did something. What did we do before we started doing the Zero-Valent Iron? We did something else before then.

MR. BALLARD: No.

MR. WILLIAMS: We -- that was the first process.

MR. BALLARD: On the property in the source areas ---

MR. WILLIAMS: Okay.

MR. BALLARD: --- the remedy -- the Record of Decision in 2004 called for treating the contaminated groundwater with Zero-Valent Iron ---

MR. WILLIAMS: Okay.

MR. BALLARD: --- as presented here tonight.

MR. WILLIAMS: Okay.

MR. BALLARD: It called for treating the soil from the top of the water table to the surface. Basically what -- we call it the vadose zone, the unsaturated zone, with Soil Vapor Extraction, which is what we're doing using the standard industry -- the standard Soil Vapor Extraction, which is just go out and vacuum, and the thermally-enhanced Soil Vapor Extraction, which basically ---

MR. WILLIAMS: Okay. The thermal-enhanced, that's what ---

MR. BALLARD: Thermal enhancement, but the Record of Decision didn't specify thermal-enhancement, but it did say that due to the nature of the top layer, it may be necessary during the design to add some enhancements to speed up the -- or reduce the time, I should say -- reduce the time that it will take to get everything out of the ground. It's just -- I mean, I kind of liken it -- this isn't a perfect analogy, so don't hold me to it. But if you get -- if you get a Frosty from Wendy's and you put a straw in it and you try and suck on it, it's really hard to get a satisfying mouthful. Okay, and then you think of that as the top layer. If we just took these vacuum wells and put them in there and threw a vacuum on it, we'd be drawing a vacuum for a really long time because we couldn't get a satisfying mouthful of that stuff.

MR. WILLIAMS: Uh-huh.

MR. BALLARD: But and think of the bottom layer sort of as a Frosty that's softened up and melted enough that you can easily draw a vacuum on it and get the -- and get a satisfying mouthful. That's what we're trying to do with these two different -- but it's the same thing. We're drawing a vacuum with the Soil Vapor Extraction to pull the contaminants out of the soil. So we're still on Plan A for these Source Areas portion of the remedy.

MR. WILLIAMS: Point made.

MR. DOBBS: If there are no more comments, this will conclude tonight's presentation. We thank you all for coming out. David, Tom, EPA and I will stick around if

anyone has any other questions pertaining to our cleanup efforts at the Memphis Depot. Again, thank you for coming out.

(Whereupon, at approximately 7:45 p.m. the meeting was adjourned.)

NEXT MEETING:
Restoration Advisory Board meeting
6:00 pm
September 20, 2007
Ruth Tate Senior Center
1620 Marjorie Street
Memphis, Tennessee

Attendance List

Mr. Mondell Williams	RAB Community Co-Chair
Mr. Mike Dobbs	Defense Logistics Agency
Ms. Jackie Noble	Defense Distribution Center
Mr. Stanley Tyler	RAB Community Member
Ms. Johnnie Mae Peters	RAB Community Member
Ms. Peggy Brooks	RAB Community Member
Mr. Ulysses Truitt	RAB Community Member
Mr. Torrence Myers	Memphis Light, Gas & Water
Mr. Turpin Ballard	U. S. Environmental Protection Agency
Mr. Tom Holmes	e^2M
Ms. Denise Cooper	e^2M
Ms. Alma Moore	Frontline Communications
Mr. Brett Frazier	US Army Corps of Engineers
Ms. Karen Tyler	Community Member
Mr. Chris Hobbins	Air Force Center for Environmental Excellence
Ms. Geneva Boyd	Community Member
Mr. Reuben McNeil	Community Member

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