THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

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PUBLIC COMMENT MEETING
The Former Memphis Depot
November 13, 2008
1620 Marjorie Street
Memphis, Tennessee

The Public Comment Meeting for the Dunn Field Revised Proposed Plan was held at 6:00 p.m. on November 13, 2008 at the Ruth Tate Senior Citizens Center at 1620 Marjorie Street, Memphis, Tennessee.

WELCOME AND INTRODUCTIONS:

MR. DOBBS: Good evening. On behalf of Defense Logistics Agency, I would like to welcome you to tonight's public presentation on the Revised Proposed Plan addressing Dunn Field.

Here is a quick agenda we're going to go over for tonight's meeting. Tom Holmes is from e^2M. He's going to talk to us for 30 minutes on the Proposed Plan giving a presentation. We will follow with some points of clarification. So if you have any things you need to clarify, we'll go over that.

Following that point, then we'll go into the public comment period. You have two options tonight. If you have a public comment, you can come up to the mike and talk and address your public comments and we will take them. We will not be answering them. Or if you want to write it, we have some forms over here. You can write down your comments, and we'll look at them that

way, put them in the record.

All the responses to all the comments will be put into the Responsiveness Summary in the final Record of Decision, and that will be available in the Information Repository.

So, with that, I would like to introduce Tom Holmes, and we'll begin his presentation.

PRESENTATION:

MR HOLMES: Hello. I'm Tom Holmes, project manager for e^2M, and I will go through some of the key points in the Revised Proposed Plan.

So the overview: remedial action objectives (RAOs), the selected remedy from the 2004 Record of Decision (ROD), the status of those selected remedy components, proposed changes to the ROD that are in the Proposed Plan, why air sparging and soil vapor extraction -- which was one of the fundamental changes or the fundamental change -- and what is air sparging. Then we'll talk about the screening criteria that we use to evaluate the alternatives, and then discuss the opportunities to comment. And then I will take any questions regarding clarifications.

So, here is just a map of Dunn Field with Hays Road and Person here, the railroad tracks, and the MLGW

Substation. So, the area we're looking at is on the disposal area and the source areas and the off-Depot plume which extends to the west and the northwest from Dunn Field.

Remedial action objectives are the objectives that actions meet to protect human health and the environment according to the intended future land use, which is industrial for Dunn Field.

The remedial action objectives were specified in the Dunn Field ROD from 2004, and this Proposed Plan does not change any of the RAOs.

The changes in the Proposed Plan though will help to meet the objectives for subsurface soil and groundwater, which are presented on this slide. So, for subsurface soil, the objectives are to prevent direct inhalation of indoor air vapors from subsurface soils in excess of the industrial worker criteria. And then also to reduce or eliminate further impacts to the shallow aquifer from the VOCs in subsurface soils.

In groundwater, the objectives are to prevent human exposure to contaminated groundwater, prevent off-site migration of VOCs, and to clean up the shallow fluvial aquifer groundwater to drinking water quality to be protective of the deeper Memphis aquifer. The deeper

aquifer is where the City of Memphis gets its water supply, and it has not been impacted from the fluvial aquifer, from the plume and aquifer that we're going to clean up.

So, the selected remedy in the ROD contained the following components: Excavation, transportation and disposal of soil and material within disposal sites in the source areas in the western half of Dunn Field. Soil vapor extraction, which was to reduce the volatile organic compound concentrations in subsurface soils, to be protective for the intended land use, and to protect groundwater. And zero-valent iron injection in the groundwater under Dunn Field to treat chlorinated volatile organic compounds, or CVOCs, in the most contaminated part of the groundwater plume.

ZVI, we've discussed at other public meetings and RAB meetings, breaks down CVOCs by a chemical reaction. In the off-Depot plume, we were going to treat CVOCs with a ZVI permeable reactive barrier for areas of the off-site plume with higher concentrations. The plume flows through a PRB wall, and the ZVI within the wall breaks down the CVOCs.

The remedy also included monitored natural attenuation and long-term groundwater monitoring. Those are to

document changes in plume concentrations, detect potential migration off-site and/or into deeper aquifers, and to track the progress for the remedial goals.

Finally, it included land-use controls: Deed and/or lease restrictions, notice of land-use restrictions, Shelby County zoning restrictions, and groundwater well restrictions. So those are the components.

These slides, this table on this and the next few slides, discuss the status of each of those components.

(For)the disposal site, as I said, the remedy was excavation, transportation and disposal. That was completed per the ROD in March of 2006. The subsurface soil, the remedy was the soil vapor extraction. That remedy was modified to include thermal-enhanced -- enhancement of the SVE in the loess and excavation of two shallow areas.

The conventional SVE in the deeper fluvial sands began in July of 2007. 3,000 pounds have been removed to date, 3,000 pounds of CVOCs. The thermal-enhanced SVE in the loess began in May of 2008, and 12,000 pounds have been removed since we began, and we are approaching completion of that action.

The initial excavation of the two shallow areas was

completed in January of this past year -- of this year, and some additional excavation is planned in 2009.

In groundwater, the components for the source areas was ZVI injection, which is to be made in areas with total CVOCs exceeding 1000 micrograms per liter, after the thermal-enhanced SVE.

Off-Depot groundwater, the installation of the PRB was the selected remedy, and that is the primary subject of the Proposed Plan. The PRB is to be replaced by an air sparging and soil vapor extraction system. And that's to be implemented in 2009 as part of the Off-Depot Remedial Action.

For site-wide groundwater, MNA and LTM in the lower concentration areas will be implemented per the ROD in 2009 as part of the Off-Depot Remedial Action, as will land-use controls, which are the component to address the site-wide land-use issues also in 2009.

So, the proposed changes, why we're doing it:

Additional information gathered since the 2004 ROD has led to a reassessment of components. We have a lot more information based on groundwater monitoring that we have done since then and installed a number of new monitoring wells in the off-Depot and Dunn Field area. Remedial Design investigations have been performed, and

implementation of the remedies that we have done to date provided us a lot of information that we used to re-evaluate the remedy in the ROD.

There are three categories of post-ROD changes: There's a fundamental change, which is the change in overall treatment approach, and that requires a ROD amendment. And the change from the PRB to the air sparging/SVE falls in that category.

There are also significant changes, which are changes to components within the same -- using the same overall cleanup approach, and that requires an explanation of significant differences, which is a less involved document. And then minor changes to remedy specifications that don't impact the scope, performance or cost can be addressed through note in the administrative record.

We have made changes that fall into all of these categories, and we have rolled them all up into the -- listed them all in the Revised Proposed Plan, and we'll cover them all in the ROD amendment just so everything will be in one place.

As I said, the Revised Proposed Plan was prepared because of this one fundamental change to the off-Depot component of the remedy, and that's the use of air

sparging with SVE to treat the CVOCs in the off-site area in the groundwater plume instead of the permeable reactive barrier.

This is a figure from the ROD. Here is Dunn Field over here (indicating on the map). This shows the various groundwater remedies. Here is where the PRB was proposed in the Dunn Field ROD, and you will see later we've got a slide of where the air sparging system is going to go. It's in a similar location a little further to the west. But that's that.

So, as I said, there were a number of studies performed that led to this change. Monitoring of the groundwater plume west of Dunn Field identified areas of higher concentrations of CVOCs further from Dunn Field than we had known at the time of the ROD. And also hydrogeologic information, the groundwater gradient, the thickness of the aquifer or saturated zone were different than were understood at the time of the ROD based on all the additional studies that have been done, and those would have impacted the PRB installation at its planned location.

We looked at alternate locations for the PRB and performed a field implementation study. That also identified challenges for it, and that was a variable

clay surface at the bottom of the aquifer which made it difficult to install a uniform PRB that would capture and treat all of the groundwater flow. Higher groundwater velocities would require a thicker PRB wall. We found construction challenges in putting in a uniform consistency of the iron in the wall; and then also because of where the PRB would have to go, additional remedial technologies would have been required to treat the entire plume.

So, in addition, as I mentioned, there were other changes, significant and minor changes, to the remedy. And those are the -- for groundwater remedy, those are the length and the treatment objective of the air sparging/SVE. The ROD described where the PRB would go, and we have modified that based on the additional information so the air sparging/SVE won't be located at the exact place that the PRB would.

The ROD called for ZVI injections on Dunn Field in the areas of highest concentration. That wasn't really clarified. So about a year or so -- awhile back, we selected -- 1,000 parts per billion (ppb)concentration in groundwater is what would be considered high concentrations; and then we decided that following the other treatments, the SVE and the thermal SVE and the

excavation, we would look for areas above a thousand ppb and inject ZVI there. As it turned out, at this point, the remedies have been so successful, there are no areas on Dunn Field where the groundwater concentrations are anywhere near a thousand. And so, at present, we won't be injecting ZVI.

Also, we changed the sequence of the remedy. Originally in the ROD the ZVI injections were going to be first, and then we were going to do the SVE. We were concerned, based on the ZVI treatability study, that that might, with the lapse in time, there might be some rebound or increase in concentrations in groundwater if we treated the groundwater first. So we decided we would treat the soil first and then treat the groundwater. And that's worked out well because the subsurface soil remedies have been so successful. Subsurface soil, the changes were the areal extent. The definition of the soil areas that needed treatment in the ROD were based on a limited amount of data. We collected a lot more data and found out we didn't have to treat quite so much because other areas were already below the remedial goals that were set in the ROD. We decided we would have to use thermal-enhanced SVE in the loess, which is a silty clay soil. It's very tight

and doesn't allow much air movement. And so, we determined just regular SVE would not work there. And then also, as I mentioned, the excavation in two shallow areas where it didn't make sense to do the thermal-enhanced SVE, it was just more cost effective and more protective to just dig up the material. And all those changes were also based on the additional information gathered since the ROD was signed. Various studies that I've mentioned already: The field treatability study for ZVI that evaluated the effectiveness of ZVI in cleanup of CVOCs. And early implementation of selected remedy using ZVI injection, this was performed in 2004 and '05 near the MLGW Substation. SVE pilot studies on Dunn Field that addressed the effectiveness of SVE for the fluvial and loess deposits. And the remedial design investigation of CVOC concentrations in loess and groundwater that helped define the areas that actually required treatment.

So, why did we select air sparging/SVE in the Revised Proposed Plan? We looked at a couple of remedies that we had thought about before and had been evaluated in the ROD, and once we decided the PRB wasn't the most effective, we went back to those remedies first.

We looked at enhanced bioremediation treatment that's being used on the Main Installation. It's had some success in reducing the groundwater concentrations there. And we also looked at air sparging with soil vapor extraction based on its use at a number of other sites.

For the enhanced bioremediation treatment option, we performed a microcosm study that evaluated the breakdown rates of CVOCs using different carbon sources, site sediments and groundwater to make it similar to the conditions in the off-Depot area, and commercially available bacteria consortia.

We identified several challenges with that method. One, the aquifer conditions. The enhanced bioremediation treatment works best in a low oxygen environment, and the fluvial aquifer is very aerobic. So it requires additional treatment to remove the oxygen in that groundwater.

There is a lack of field verification. Although it's been used in many cases that's in many areas, and as I said, is being used on the Main Installation, we were looking at using a commercially available bacterial consortia, and that hadn't been used at a lot of sites; and so, there was some question about whether that

would work. The delivery of the carbon source for the -- that would feed the bacteria, there would be some issues with that based on the information we gathered.

Additional studies were required before we could implement this, and there is a significant amount of field labor to do the repeated injections of the materials. So those were issues with it.

And air sparging and SVE was selected partly because of those issues. Also for a number of reasons: One, similarities with the ZVI PRB. Air sparging, although different, still relies on the physical and chemical processes rather than the biological processes for EBT. We could position the air sparging and SVE remedy so that a large portion of the plume would be treated with only a minor -- or a much smaller area that required monitored natural attenuation. And there are limited operations and maintenance required for both of these, more for air sparging than for the ZVI PRB, but a lot less than for the EBT remedy.

Also, air sparging and SVE, it's been used at a number of sites. It's a proven and effective technology. Construction of the system is straightforward, requires standard drilling methods to install the air sparging

and SVE wells. The equipment needed to run the system, blowers, compressors, are readily available.

We've had very successful operation of the fluvial SVE system on Dunn Field, and then we can also evaluate the effectiveness of the air sparging system in a short period of time. Whereas, particularly with the enhanced bioremediation, it would take a much longer time to know if it was working well or not.

So, here is a map from the -- I think in the Revised Proposed Plan. This green line is the location of the air sparging system. Of course, here is Dunn Field over here, the boundary here. Here is the substation. We're mainly on the road -- it would be positioned on the road Menager I think, and then the little jog down the abandoned railroad tracks here would not be within the substation.

The PRB was positioned right along the railroad tracks here. So it's relatively close, but it captures more of the plume. The plume is indicated by these colored lines. Those are concentration contours for the CVOCs in the plume.

So, what is air sparging? It uses injected air to move the chlorinated volatile organic compounds, the CVOCs, that are dissolved in groundwater into vapor above the

water table, and then the vacuum system, the SVE, pulls the air and the CVOCs through extraction wells to a control building where we can monitor the air flow, the pressure, and the CVOC concentrations.

Here is a diagram of it (indicating the slide). So here you have the air sparging well, which goes down below groundwater. This is the water table. Of course, this is the ground surface up here. So it goes down -- this is at a depth of about 70 feet and will extend down to about 90 feet--air is injected. So it just kind of bubbles up through the groundwater and the soil. It carries the CVOCs, pulls -- they come out of solution in the water, go into the air, and then go up above the water table into this unsaturated zone. And then the vacuum system pulls the air out of the soil, and then it goes into the control building, where, as I said, we would be able to monitor it.

These criteria, the air sparging and the original PRB, were evaluated using screening criteria required by the Comprehensive Environmental Response Compensation and Liability, or CERCLA, Act. It requires that alternatives be evaluated using the following criteria. These are the same criteria that we used to evaluate the alternative in the ROD.

The first two are the threshold criteria that the remedies have to meet, overall protection of human health and the environment, and compliance with applicable or relevant and appropriate requirements. And balancing criteria, long-term effectiveness and permanence. Reduction of toxicity, mobility and volume through treatment. Short-term effectiveness of the system. The implementability of the system, and cost. Then finally the modifying criteria, state acceptance and community acceptance.

So, here is a table from the Revised Proposed Plan that compares the two criteria, the PRB and MNA and the air sparging/SVE. These same criteria, as I said, were used to evaluate the PRB in the ROD. These evaluations here in some cases are different than the one in the ROD. They're different because of all the additional information that we have gathered since then.

So, both were considered protective of human health and the environment, both comply with the ARARs. So they both meet those threshold criteria, but as far as effective and permanent, based on problems we noted with the PRB, that's given a low rating for that, whereas the success of the SVE system on Dunn Field (and it's used at a number of other sites) gave that a

high rating. Both reduced toxicity, mobility and volume. For short-term effectiveness, the air sparging system was rated higher. For implementability for the same issues, the air sparging system was rated higher. The total cost, as you can see, is a little bit different here. But these costs were from 2004 and probably I think they were generated in 2003. So these were taken directly from the ROD. So they would be higher now. And this is based on our current estimates.

And then state acceptance. TDEC has approved the Revised Proposed Plan. So it has been successful, as was the other. And community acceptance. The PRB had been accepted previously when the ROD was signed. Acceptance of the air sparging system will be determined after the public comment period.

So, the air sparging/SVE system meets the first eight criteria. And, as I said, the BRAC Cleanup Team will evaluate criteria nine, the community acceptance, based on comments received during the public comment period. So, there are a number of ways to comment. The document, Revised Proposed Plan, is available for public review at the Information Repository at the Depot. Here is the address (indicating the screen).

It's available during office hours, Monday through Friday, 9:00 to 5:00. It's also available on-line at this address. This is both in your handout and in the Revised Proposed Plan.

The public comment period started October 27th. There was a notice in the Commercial Appeal. It ends 30 days later, on November 25th.

You can provide either verbal or written comments tonight. You can provide verbal comments on the community information line that we will take down and respond to. You can mail comments to this address at the Depot. Any mail must be postmarked by the closing of the comment period, November 25th, or you can e-mail comments to these two addresses (indicating the screen).

Now I will discuss any points of clarification, questions about the material I have gone over. Please hold any comments until the public comment period. Any questions?

MR. WILLIAMS: In the first -- Mondell Williams, Community Co-chair. In the first part you were saying that none of the contamination affected any of the groundwater, and then you went on to say that the heat extraction which you was taking chemicals out

of the soil. Am I right? And then you went on down to say that the zero-valent iron, that means that you're extracting chemicals out of the water. So what water are we at?

MR HOLMES: All right. Well, there is the Memphis aquifer at a depth of 300 feet or so that's used for water supply for the City of Memphis. We're talking about the contaminants, the CVOCs, are in the fluvial aquifer that's at a depth of about 70 or 80 feet and goes down for 20 or 30 feet. And then there is a thick clay layer, and it's separated from the Memphis aquifer. So none of this -- the CVOCs that we're going to recover from the off-Depot area, they are in the groundwater, in the shallow groundwater, but they aren't in the Memphis aquifer.
So, the groundwater supply is not affected, and the goal of the remedy, to set forth the Remedial Action objective, is to prevent any impacts to the Memphis aquifer. So that's why we're going forward with this cleanup, to remove the CVOCs from the fluvial aquifer so they don't impact the deeper aquifer.

MR. TRUITT: Tom -- Ulysses Truitt. My memory serves me that the topography around that entire area leads to drainage into that area, and then up on the

hill above -- I think this would be south -- no, this would be northwest -- was a diesel repair shop; extreme northwest, a cleaning facility; and to the northeast, trimming and painting facilities. Are we sure that the extension of the CVOCs beyond Dunn Field originated from Dunn Field?

MR HOLMES: Well, there are some CVOCs from the northeast in a plume coming onto Dunn Field, but the area that we're going to treat is primarily material where the plume -- you can see from the groundwater wells, it starts on Dunn Field, and then it goes to the west. And it's continuous with this plume. There could be some possibility of mixing of some plumes, but primarily the area we're going to be treating is from CVOCs from Dunn Field that went off-site.

MR. TYLER: Stanley Tyler. That permeable barrier, what is the shelf life on that to preventing chemicals coming back on Dunn Field?

MR HOLMES: Well, that was going to treat the groundwater after it had moved off of Dunn Field, so that as it continued its movement, water would go through it, would be cleaned, and then this clean water would continue flowing whichever way it flowed. The

thought was that it would have lasted about 20 years. Because the idea, it would take that long for the water to flow through it.

What we had found out -- we're estimating, as I think it says in the Revised Proposed Plan, that we'll operate this air sparging system for five years, but we'll operate it until we meet the objectives. That's what's described in the ROD amendment. And the monitoring data that we have seen from Dunn Field shows that the water -- we have cleaned up the water on Dunn Field, and this clean water is moving off. So we think that five years will be sufficient.

Also, we've done groundwater modeling as part of the Remedial Design that showed -- that thought five years would be sufficient for -- to run this treatment.

We're planning on monitoring -- doing groundwater monitoring until the Remedial Action objectives meet the MCLs, the remediation goals in groundwater. We will continue to monitor them until we see that. So, we're going to treat for as long as necessary; we think five years. And then we'll monitor until the goals are completely met.

MR. TYLER: Okay. The new system, the shelf life is how long?

MR HOLMES: As long as it's operating, it's working. So, as long as you keep bubbling the air through it and then pulling it out of the ground, it will continue to remove the CVOCs.

MR. TYLER: And this one pulls more cancer-causing agents out quicker and longer than the permeable barrier?

MR HOLMES: Well, we think it will do a better -- it will pull it out more effectively than the permeable reactive barrier would.

MR. TYLER: And this is based on the additional data that you have now?

MR HOLMES: Yes. And it's used at other facilities.

MR. TYLER: And it has been successful?

MR HOLMES: It has been at a number of facilities.

MR. TYLER: And what is the oldest facility that this has been used by, 10 years ago, 15 years ago this system went in?

MR HOLMES: You know, I don't know that I could answer that question as far as the length of time.

MR. WILLIAMS: I want to go back to one more

question following on something Mr. Truitt asked. He was saying about the different chemical companies and the chemicals, and you said that the basics of it was coming from the corner of Dunn Field. Right?

MR HOLMES: Well, it's coming from Dunn Field.

MR. WILLIAMS: Okay. So, is there any coming onto -- you know, like the travel of the chemicals, are they coming towards Dunn Field and leaving or are they just being right there and moving everywhere else?

MR HOLMES: Well, they move with the groundwater flow, and the groundwater flows move in a fairly consistent direction to the west.

MR. WILLIAMS: I don't think I asked that right. Is there any other chemicals, other than what is found on Dunn Field, that's traveling through Dunn Field?

MR HOLMES: So this is a photo. I'll come over here. This shows -- so, as I said, this was the contours of the CVOCs in groundwater. So, say the pink line I think is 500 parts per billion. So this is sort of a high concentration area and it's coming, as you see, from this area here. What you see here, there is no -- the lines don't extend all the way back because we've cleaned up the groundwater on Dunn Field. You

can see this plume coming from the north, and that's the one I mentioned, and it's at lower concentrations, but it is coming onto Dunn Field.

MR. WILLIAMS: Okay.

MR HOLMES: Thank you.

MR. DOBBS: Is there any other point of clarification?

(Brief pause.)

PUBLIC COMMENT PERIOD:

MR. DOBBS: Okay. We'll get into the public comment period. Again, real quick, some guidelines for the public comment.

Tonight we'll accept all comments. We'll put them on the record. Please identify yourselves. Speak clearly in the mike. Please limit your comments to five minutes where one has the opportunity.

Comments will not be addressed tonight. We will take them on the record, and we'll put them in the response summary in the Revised Proposed Plan. So they will be available in the Repository when it's all done.

Again, a reminder, if you leave here tonight and you have a comment, there are four ways you can do that tonight. You can write it. When you go home, if you

want to, you can call the community relations line to put your comment in. Or, like Tom mentioned earlier, you can mail it to the Depot. As long as it's postmarked, we'll receive it, and we'll enter that into the record. Or you can use the e-mail.

So there are your four ways that you can provide comments if you don't have one tonight.

So, with that, if you want to come up and make a comment, we'll accept the comments.

(Brief pause.)

ADJOURNMENT:

MR. DOBBS: Okay. Since we don't have any public comments, we thank everyone for coming tonight, and thank you. That will close the public comment meeting.

MR. TYLER: Thank y'all for coming.

MR. DOBBS: Thank you.

(Whereupon, the Public Comment Meeting was adjourned at 6:37 p.m.)

Attendance List

Mr. Mike Dobbs	Defense Logistics Agency
Mr. Turpin Ballard	Environmental Protection Agency
Mr. Jamie Woods	Tennessee Department of Environment & Conservation
Mr. Mondell Williams	Restoration Advisory Board (RAB) Community Co-Chair
Mr. Ulysses Truitt	RAB Citizen Representative
Mr. Stanley Tyler	RAB Citizen Representative
Ms. Peggy Brooks	RAB Citizen Representative
Ms. Johnnie Mae Peters	RAB Citizen Representative
Mr. William Winford	RAB Civic Representative Memphis Light, Gas & Water Division
Mr. David Nelson	CH2M Hill
Mr. Bruce Railey	U.S. Army Corps of Engineers
Mr. Tom Holmes	e^2M
Ms. Angela Clark	e^2M
Ms. Denise Cooper	e^2M
Ms. Stacy Umstead	Defense Logistics Agency
Ms. JJ Goldman	The Vandiver Group, Inc.
Ms. Eileen MacLean	The Vandiver Group, Inc.

Ms. Linda Reid	Depot Redevelopment Corp.
Mr. Charles Patterson	Citizen

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