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THE MEMPHIS DEPOT
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COVER SHEET

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REMEDIAL DESIGN PUBLIC BRIEFING MINUTES

The Former Memphis Depot

February 5, 2009

1620 Marjorie

Memphis, Tennessee

The public briefing was held at 6:00 p.m. on February 5th, 2009 at the Ruth Tate Senior Center located at 1620 Marjorie, Memphis, Tennessee.

WELCOME AND INTRODUCTIONS:

MR. DOBBS: Good evening everyone. My name is Mike Dobbs. On behalf of the Defense Logistics Agency, I would like to welcome you to this evening's briefing on the Dunn Field final off-post remedy, Remedial Design.

In a moment David Nelson from CH2M Hill will be giving a presentation over the design. The presentation should last approximately 30 minutes. Following the presentation, we will answer any questions regarding the design or points of clarification. At this time, I would like to introduce David Nelson from CH2M Hill.

PRESENTATION:

MR. NELSON: Thanks, Mike. I'm the project manager for CH2M Hill for the Remedial Design and Restoration, and what I'm going to be discussing this evening is our Final Off Depot Groundwater Remedial Design.

Essentially, what we're going to do is just discuss the Final Off-Depot Groundwater Remedial Design, which will probably

be less than 30 minutes; but then after that, as Mike indicated, we will be going through points of clarification on the presentation.

The overview is we'll go through and look at the Remedial Action objectives, the selected remedy in the 2008 Dunn Field record of decision and what the selected remedy was or is.

We'll also talk about the Remedial Design process. We will discuss what is Air Sparging and Soil Vapor Extraction. We'll look at the basis of design briefly and through the remedy attributes, and then talk about the schedule of activities.

If you're unfamiliar with the area, this is Dunn Avenue, and Person is up here to the north of Dunn Avenue, and this is Dunn Field. Now, this blue area here is the area that was formerly known as the northeast open area and the stockpile area. That was transferred out. It's unrestricted use, and it's actually been sold off and is private property now.

We're speaking about this area known as the disposal area and west of that disposal area, which is the off-depot groundwater area. This is the MLGW substation just to the northwest of that or of Dunn Field.

The Remedial Action objectives for the Off Depot Groundwater RD were to prevent human exposure to contaminated groundwater, prevent further off-site migration of the chlorinated volatile organic compounds, which are CVOCs, in the groundwater, and then to clean up the shallow aquifer, the fluvial aquifer, and groundwater in that fluvial aquifer to drinking water quality to be protective of the deeper Memphis aquifer.

In the Dunn Field ROD amendment, 2008 Dunn Field ROD amendment, the selected remedy was Air Sparging with Soil Vapor Extraction. Again, the goal for this was to limit the further off-site migration of the CVOCs in groundwater that were in

excess of these protective target goals.

In addition, the remedy includes long-term groundwater monitoring and natural attenuation, and the purpose behind those portions of the remedy are to document changes in the plume concentrations, detect any potential migration to off-site areas, to deeper aquifers, and to track progress towards remedial goals.

Then importantly, last but not least, are the land use controls, which consist of deed or lease restrictions for Dunn Field, a notice of land use restrictions that are associated with those lease restrictions, and then there are several Memphis/Shelby County zoning restrictions or other restrictions such as groundwater well restrictions that are applied.

All right. So the Remedial Design process, if you're familiar with it at all, typically follows the CERCLA process and goes through a 30, 60, 90 - well, at this stage, we're at the final RD. The Final RD has been accepted by the regulatory agencies, which include the Environmental Protection Agency, Region 4, and the Tennessee Department of Environment and Conservation, TDEC. And that was accepted in 2008, October 2008.

That document, Remedial Design, describes the Air Sparging and SVE process. It includes a complete design analysis, drawings and specifications of the remedy components, and it also describes the final operation and maintenance requirements.

Now, what is Air Sparging and SVE for if you're unfamiliar with it. Air Sparging essentially uses injected air to move the CVOCs that are dissolved in groundwater to the vapor phase and moves those vapors above and moves them out of the water table and up into what we refer to as the vadose zone, which is essentially the dry zone above the aquifer. And then we apply a vacuum to the vadose zone, which is called Soil Vapor

Extraction, and that pulls the air and the CVOCs through various extraction wells to a control building where the air flow and the pressure of that and the CVOC concentrations are monitored to see how effective the system is.

This is a diagram that's one of the EPA guidance documents, but essentially, Air Sparging is air in - excuse me. Air Sparging SVE is air in and then air out. So we'll inject air down into the aquifer. The contaminants are essentially volatilized, turned into vapor, and they rise up above the groundwater table and they move into these extraction wells, the Soil Vapor Extraction wells, and then they will go into the treatment building.

So, what is our basic design? Again, the area that we were focusing on for this Remedial Design was just west of Dunn Field here, to the northwest, over towards the MLGW substation.

So, the basic design is what we refer to as what we use to build the design, what we use as a basis to construct the remedy components; and there are several components for that basis itself, and that includes a conceptual site model. This picture right here is what we've generated after several years of investigations, developing data that gave us this understanding of the conceptual site model. And that picture is also over here if you want to take a look at that.

And after we had the conceptual site model and all the data that's used to build that, we were able to create a groundwater flow model. And the flow modeling indicates that there is a reduction of CVOCs in the fluvial aquifer away from the source area through time. Seems pretty logical, but sometimes you have to model that to prove that it actually is occurring. So that was done based on the data.

The Air Sparging remedy, the basis for it, it's designed to treat the larger mass of the off-depot groundwater

contamination, and I will show you a picture of the layout of that. It's also based on professional experience, CH2M Hill's professional experience, basically the team's professional experience with Air Sparging at many sites with similar geologic and chemical conditions.

And then we also referred to a document which is accepted within the professional engineering ranks, and it's entitled the Air Sparging Design Paradigm; and this document is important for developing the three most important factors of Air Sparging, which is the air distribution, the distribution of the contaminants in the aquifer versus that distribution, and then the contaminant characteristics.

The SVE remedy, as I stated earlier, is designed to remove any CVOCs vapors that are generated from the Air Sparging. So, once they volatilize, the SVE is designed to pull those vapors out of the vadose zone. The system that will be installed is based on the experience that we've felt with the system that's in place on Dunn Field, which has been quite successful; and the system was also designed to capture 150 percent of the injected air and the vapors.

So essentially, what that's saying is we're going to do more than 100 percent as far as pulling air in. We will be capturing more air than is actually injected. There's air in the vadose zones. What we're going to do is pull the air that we've injected, pull that out along with air that's already existed there to make sure that we're not allowing the vapors to escape.

And other important components for the basic design include the long-term monitoring and natural attention. Long-term monitoring is an accepted and regulatory and professional practice of monitoring plume reduction over time by natural processes. And a lot of the sampling practices, data management

that we currently use on the former Memphis Depot, will be put in place to manage this data, and as well as our sampling practice.

And then importantly, the land-use controls. There are multiple land-use controls, as I showed earlier, that are used to ensure the protection. And they utilize various man made or local regulations. Man made may be something like fencing throughout the area.

So, what is this Air Sparging remedy composed of, what are the attributes of that? Well, Air Sparging will have injection wells drilled into the ground, and they will be primarily along Menager Avenue, which is just south of that MLGW substation. At each one of these points we'll inject about 15 standard cubic feet per minute of air. And each well, each one of those points will be drilled to approximately 90 to 100 feet below ground surface. There will be two offset rows -- about 15 feet between the rows. There will also be some additional rows, kind of in the center, that are going to be located to address the more contaminated parts of the plume.

There will be 90 wells. Those are planned, those designs are already set. But this final configuration will be dependant on or based on a groundwater sampling event that occurs once the wells are installed. And along with all the data that we've generated throughout the years, we use all that to develop that final configuration.

So here's a map of the air sparge system. Again, this - Rozelle kind of merges into Menager, and this is the MLGW substation right in here. It's not pictured. You can see the Air Sparging system here. It runs along what is Rozelle and turns into Menager, and you can see it's -- all the 90 points are laid out in these two rows. And then right here in what is currently the higher mass or core of this plume there are

several other rows, we'll treat that and volatilize those contaminants.

This map shows the Air Sparging points with the estimated plume location, and these dash lines represent concentrations of the plume, and this is October 2008 data. So it's pretty new data, and it's showing, again, these Air Sparge points in blue, and the various plume concentrations contours. The higher concentration is right in here. And you can see our concentration of Air Sparging runs right there.

Again, the SVE system, there will be 12 wells that are drilled into the vadose zone, which is the dry zone. But they are drilled anywhere from 35 to 65 feet below ground surface with 30 feet as screens. So they're designed to have an open area screen that pulls in more air, very efficient in that design. They have a design flow rate of 150 standard cubic feet per minute, and each point will be about 50 feet apart, so 50-foot on center. And again, this is designed to effectively capture the vapors.

There will be 10 vapor monitoring points, again, to increase that effectiveness and all these 12 wells will be operating in concert or concurrently with the 90 Air Sparging points. And just as with the Air Sparging points, the final configuration will be dependent upon the most recent groundwater sampling results as well as once we get the Air Sparging points.

So, it's probably difficult to see from where you're sitting, this picture is supposed to show each one of the SVE points and the estimated capture zone, the radius of capture for each of these SVE wells. So you can see that each one of these circles will basically capture a certain number of points or air sparge points. Again, the idea is that they are pulling from this area, and they're capturing all the vapors that are generated as a result of the Air Sparging that will be going

subsurface.

And then, as I mentioned, we have various vapor monitoring points. There are about 10, the red dots located throughout here, again, that's for the effectiveness. So there will be a treatment system. The treatment is connected via buried PVC piping that will go to two buildings that are located west of the Air Sparging points; and if you look on this map, those are the two little buildings sitting over here to the west of the Air Sparging area.

These buildings will hold the Air Sparge compressor and the SVE blower and control center. The Air Sparging and SVE system, as I said earlier, will run concurrent. So these systems will be on at the same time to make sure that if there's air being injected, there's air being pulled out.

The buildings are designed for noise reduction. So you really wouldn't hear anything unless you got right up at the door of the building. And these building locations, we looked at various places then, but MLGW, since it's their property and they have a lot of utilities in the area, they controlled where we actually put them. So, with their agreement, we located them to the west of the Air Sparging points.

Along with the Air Sparge and the SVE installation we'll be installing nine fluvial and two intermediate aquifer performance monitoring wells. We'll also be doing some off-gas monitoring, SVE performance air monitoring, and then, of course, performing operation and maintenance of the system regularly throughout this Remedial Action.

The Air Sparging and SVE systems are expected to operate approximately five years to meet the groundwater remediation goals. The remedy completion, once it's completed, once the systems or groundwater has met the remediation goals, the system will be decommissioned, and includes well abandonment, remove

buildings that have been installed.

We'll also have, as I mentioned earlier, the long-term monitoring and natural attenuation. Again, these are to document changes in the plume concentrations. It will also help us detect any potential migration to off-site areas or into deeper aquifers. We'll also use this to track progress toward remedial goals. And the expected monitoring period is 30 years to ensure that the groundwater remediation goals are met.

Land use controls, again, will consist of deed and lease restrictions for Dunn Field, and there will be a notice of land use restrictions that run with those lease restrictions; and there are several zoning restrictions that the county already has in place, and those zoning restrictions will be applied along with groundwater and well restrictions. And these restrictions are in place until they are deemed unnecessary by evaluation of effectiveness of the remedy.

All right. So here is the schedule of activities for the Remedial Design and Remedial Action that follows that. The public briefing, which is what we're here doing tonight, then there is the Remedial Action work plan that is in progress and should be accepted by spring of this year, and that's followed by the implementation, which is going to start in the summer and should be finished in the fall of 2009. And then once that's complete, you have the system start-up, which will be in the fall and winter of 2009, 2010. And then once the system is started, there's performance monitoring and operation and maintenance that goes on, and that will be from 2010 to the remedy completion.

POINTS OF CLARIFICATION

MR. NELSON: And that's the end of the presentation. The

next stage is to do points of clarification about the presentation. So if you have any questions, please stand up and state your name and ask any questions.

MS. BRADSHAW: I have several questions. My name is Doris Bradshaw. I want you to go back to where you were in Dunn Field. You showed the line.

MR. NELSON: That one or this one.

MS. BRADSHAW: Go on. That there.

MR. NELSON: Okay.

MS. BRADSHAW: The land that was sold you said was unrestricted.

MR. NELSON: Uh-huh.

MS. BRADSHAW: So it has no type of institutional controls or nothing on there. Like it's supposed to be clean, pristine, back to nature, like it was before you got there. That's what you're saying about the land that was sold. So they can build houses on it.

MR. NELSON: That's right.

MS. BRADSHAW: You know, that was my greatest fear. How can this little strip of land still be dirty and this strip is so clean all of the sudden, and you've got the CVOCs, but I want to know what happened to the cobalt, the alpha and gamma that was found in the water during the time of testing. And I'm going back, what happened to that, and how is that going to fit in? Because this is not the area that creates that type of radiation. We don't have stone, so that's not the answer. People have told me, you know, nature do these type of things in certain areas. But there was cobalt 60 found, there was alpha and there was gamma, and all of the sudden this done disappeared, and the only thing that we worry about is VOCs, and the 289 chemicals all the sudden have dissipated and it's of no interest to anyone.

Now, from my understanding, we asked years ago about Dunn Field -- you know, building houses on Dunn Field, somebody buy that land and start building houses on that toxic land. To me that land is not pristine because I haven't seen anyone really dig up that side like it should be, and then toxins is still going into the water that we don't even know exactly where the source is. That bothers me.

MR. DOBBS: Ms. Bradshaw, tonight can you please restrict your questions to the design and not on Dunn Field?

MS. BRADSHAW: I understand, but I want that in the record first. Now I will go back to the design.

MR. DOBBS: Thank you.

MS. BRADSHAW: Go up a few if you don't mind. Back, you know, toward the end. Okay. The sparging system. Okay. Who have this system in place already? What's the track record of this system, and how long this particular system has been in use? And that's my question about this. And also, I would like to have your slides also.

MR. DOBBS: Thank you. Anyone else have questions?

MS. BRADSHAW: They are not going to be answered tonight? About the sparging system. That's what he was here to discuss.

MR. DOBBS: No. We've briefed you on the design. We're not going to answer your questions on the history of the system. We will respond to that question.

MS. JEFFRIES: You will respond in writing?

MR. DOBBS: Yes, we will respond in writing. Yes, ma'am.

MS. JEFFRIES: At what point?

MR. DOBBS: We will go back and get you an answer to those points.

MS. JEFFRIES: Okay. So your response to her is that you don't have an answer right now? Because I'm interested in the slides as well.

MR. DOBBS: She asked where is this list, and we're saying give us an opportunity to go back and get you that list because we don't have that tonight.

MS. JEFFRIES: Well, that wasn't what was said. Actually, it was that I'm not responding to your question is what I heard.

MR. DOBBS: We will respond to your questions from tonight in writing.

MS. JEFFRIES: So then we will be able to access your slides? So we will be able to access your slides is what she's asking. Will those slides be e-mailed? Will that presentation be e-mailed?

MR. DOBBS: We'll get you access to these slides. The slides will be posted on our web site, and we will respond to you in writing to let you know you can access the slides. If you do not have the internet, we can mail you a copy of the slides.

MS. JEFFRIES: Okay.

MS. PETERS: I'm Johnny Mae Peters, and I think I have come to practically every meeting that we've had; and unless I misunderstood, did you say there were 12 wells that would be monitored for 30 years?

MR. NELSON: These blue points are the Air Sparge points, but you can see there are several monitoring wells that were drilled previously during investigations, and those wells will be included in the monitoring for 30 years. Those are groundwater monitoring wells that will be included in that monitoring. So it's not just 12.

MS. PETERS: Well, you mentioned 12.

MR. BALLARD: There were 12 extraction wells.

MR. NELSON: There are 12 SVE points -- actually, there's 10 SVE points. I misspoke. There are 10 Soil Vapor Extraction points that will be installed along with the Air Sparge points, these points right in there.

MS. PETERS: And with those wells, you can tell if any chemicals spread back into the already clean soil?

MR. NELSON: Yes, these are groundwater monitoring wells. So they will be monitoring what goes on in the aquifer.

MS. PETERS: For 30 years?

MR. NELSON: Yes.

MS. PETERS: There's a whole lot of money being spent. And you say you're going to build some houses over there? From when we first came here, they said they would use light factories, but they never mentioned that they would build any houses on Dunn Field. Because Dunn Field was a Depot.

MR. BALLARD: No, there's no housing.

Mr. WOODS: It's zoned commercial industrial. So there will be no houses built on Dunn Field.

MR. BALLARD: Not to mention underneath the power lines.

MS. BRADSHAW: It's unrestricted. That means they can do whatever they want.

Mr. WOODS: No, it's unrestricted for commercial or industrial use.

MS. PETERS: A few minutes ago I heard him say something about build houses on Dunn Field. That's what I understood.

MS. BRADSHAW: That's what I asked. That's true.

MS. PETERS: So I know from when we first started coming here, there could never be any houses built on Dunn Field.

MS. BRADSHAW: There was not any institutional control.

MR. DOBBS: For a point of clarification, for Dunn Field, once the property is transferred over to another owner, it will be zoned for, I think, light industrial, whatever your city government allows you to build.

Mr. WOODS: Commercial industrial basically, warehouses, you know.

MS. PETERS: That's not what he said.

(Multiple conversations.)

MR. BALLARD: I would just like to clarify. There is a little difference here, but I think a distinction is being made.

MS. PETERS: But what I'm saying, I understood him to say that a few minutes ago.

MR. BALLARD: He said that. Now, what we're saying is as far as the cleanup of the site goes, as far as any restrictions that we would impose under the Superfund Law in a Record of Decision, that portion of Dunn Field was found to be acceptable for unrestricted use, but it still falls under the current city/county zoning for light industrial.

So, regardless of anything that we put in the Record of Decision, they can't put houses there under the current zoning.

MS. PETERS: But, see, he said it. That's why I asked.

MR. BALLARD: He said it could be done. He was talking about with respect to the use restrictions that we would put in a Record of Decision under the Superfund Law, and we found in the original Record of Decision, after the Remedial Investigation and the Risk Assessments, that that part of Dunn Field was acceptable from a risk and exposure standpoint for unrestricted use. That doesn't mean that it can be used for that because of the current zoning.

MS. BRADSHAW: Yes, it does too.

MR. WOODS: In other words, we cleaned up at a standard to be safe for people to actually live there. But no way the city's ever going to rezone that to actually build houses.

MS. BRADSHAW: We don't know that. We'll be dead and gone.

MR. WOODS: Well, that's the city's zoning.

MS. BRADSHAW: We'll be dead and gone; and there was supposed to be institution controls in that, from my understanding, that houses was never supposed to be placed on

there.

MR. WOODS: And that's correct.

MS. BRADSHAW: And he said it's unrestricted. Unrestricted means they can do what the heck they want to do.

MR. WOODS: No. That means we cleaned it up to that standard; but as far as the actual reuse for the city and county, it's light industrial, commercial reuse, not residential.

MS. BRADSHAW: That needs to be clarified. That needs to be clarified. I don't care if the ROD is done or whatever. Unrestricted -- and this was our fear in the beginning, is to never let houses be built on that land, on that toxic land, because it's not cleaned completely up.

MR. DOBBS: Okay. Thank you. But are you talking the blue portion again?

MS. BRADSHAW: Yeah. I'm talking about all of it.

MR. DOBBS: Okay. The blue portion we no longer own. That is sold.

MS. BRADSHAW: I know. I know. You know that once the government turned it a loose, they was -- you were going to say, "Well, this is not mine." They go to dig and they find something else, it's not yours either because they own it. And this same thing going to happen with this land that is dirty, and we know it's dirty. All of it is to me. Because I feel like all you did was you dug out a few little places, but that whole field was never dug up, and it was a dumping ground.

MR. DOBBS: Does anyone else have any questions on the presentation that we gave tonight? Any questions or points of clarification on tonight's presentation?

MS. BRADSHAW: If we ask you to present this to another group, can you come and do that? Because it's my understanding - I understand that you're trying to just show us, you know,

what you're going to do. You're kind of like talking to us more so. I thought that this was going to be like public comments and all this kind of stuff about an addition that you was going to add on to the - well, not Record of Decision.

MR. DOBBS: Tonight's presentation was just to talk about the design and that's it.

MS. BRADSHAW: Okay.

MR. BALLARD: The public meeting for the Record of Decision was back in November.

MR. DOBBS: November.

MS. BRADSHAW: I thought this was the amendment.

MR. BALLARD: No. The amendment was back in November.

MS. BRADSHAW: And so, it hasn't been signed on yet?

MR. BALLARD: It's being signed. It's in signature. That's our process now.

MS. BRADSHAW: Is it already signed or is everybody kind of reviewing?

MR. BALLARD: It's in signature now. No more review. It's just waiting to be signed.

MS. BRADSHAW: And what's the date again?

MR. BALLARD: Any day.

MS. BRADSHAW: Any day. Okay.

MR. DOBBS: Okay. If we have no more questions or points of clarification, I would like to thank everyone for coming out for tonight's presentation, and have a safe drive home. Thank you.

(Briefing adjourned at 6:40 p.m.)

Attendance List

Ms. Stacy Umstead	Defense Logistics Agency
Mr. Turpin Ballard	Environmental Protection Agency
Mr. Jamie Woods	Tennessee Department of Environment and Conservation-Division of Remediation
Mr. Jerry Easley	Community Member
Ms. Gwen Jeffries	Community Member
Ms. Karole Harres	Community Member
Mr. Tom Holmes	e^2M
Ms. Denise Cooper	e^2M
Ms. Johnnie Mae Peters	Restoration Advisory Board
Mr. Brett Frazier	U.S. Army Corps of Engineers
Mr. Stanley Tyler	Restoration Advisory Board
Ms. Karen Tyler	Community Member
Ms. Doris Bradshaw	Restoration Advisory Board
Mr. Steve Wolf	Issues Management Solutions
Mr. Bob Goodrich	Issues Management Solutions

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