Location: Memphis Depot Industrial Park, Building 271, 2249 Truitt Street, Memphis, Tennessee

U.S. Army, Base Realignment and Closure Division: Jay Foster CALIBRE: Joan Hutton USACE, Mobile: Laura Roebuck TDEC Division of Remediation: Jamie Woods U.S. EPA, Region 4: Diedre Lloyd HDR EOC: Tom Holmes, Denise Cooper, Taylor Redmond Trinity ADC: Todd Calhoun

INTRODUCTIONS

Jay Foster introduced himself and stated he wanted to focus on two things, excess property and trying to transition remaining land for reuse. Mr. Foster stated that the team needs to define what the end-state (10-15 years ahead) will look like in order to know what we are working toward, and what are realistic objectives. Army is looking to the Environmental Protection Agency (EPA) and Tennessee Department of Environmental and Conservation (TDEC) for guidance since we are working toward the same goal. In response to a question from Diedre Lloyd, Mr. Foster stated he oversees over 100 BRAC sites with about 20 being very active.

The attendees provided brief introductions:

Taylor Redmond (HDR) is mainly responsible for field work and field event management.

Todd Calhoun (Trinity ADC) is primarily responsible for the air sparge/soil vapor extraction (AS/SVE) system.

Laura Roebuck (USACE) is responsible for managing the prime contractors, Trinity and HDR.

Denise Cooper (HDR) is a historical document keeper and assists with AS/SVE, general site maintenance and communications.

Tom Holmes (HDR) Project Manager since 2006 and has been involved in all of the remedial action on this site.

Jamie Woods (TDEC) has been on this site for 10+ years.

Diedre Lloyd (U.S. EPA, Region 4) has been on this site for 4 years.

Joan Hutton (CALIBRE) is a BRAC environmental coordinator. Ms. Hutton is the BRAC office's representative for DDMT and has been on the project since 2011.

The discussion then turned to the agenda topics with reference to the handouts provided to the attendees.

MAIN INSTALLATION

Vapor Intrusion Study (Comprehensive Vapor Intrusion Map, VISL Assessment Memo)

Tom Holmes stated the *VISL Assessment Memo* was submitted to USEPA and TDEC in August. He noted that USACE identified a mistake in that the chloroform concentration for well DR2-1 was incorrectly entered in the Johnson and Ettinger (J&E) model. HDR checked the rest of the model

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input and found all other entries were correct. The error did not increase the affected risk estimates for chloroform in that well above 10⁻⁶ for cancer risk or 1 for hazard index. The findings stated in the memo did not change. Corrections to the memo were provided to the attendees.

Mr. Holmes stated the Comprehensive Vapor Intrusion (VI) Map (first figure in the handout) showed areas with groundwater concentrations for tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride, carbon tetrachloride and chloroform above the screening level calculated by the VISL calculator. The outlined areas present a potential risk to human health based on the VISL model; the estimated risks from the J&E model were about an order of magnitude less. Both methods indicated potential VI risks were present on the Main Installation (MI) and HDR is moving forward with the next step, soil gas sampling; a work plan will be submitted for internal review in September.

Mr. Holmes noted that the HDR risk assessor raised a concern that the J&E model had not been updated recently. Diedre Lloyd stated that the J&E model was a better indicator for the MI since it incorporates site-specific factors.

Joan Hutton asked if the VI Study would be included in the Five-Year Review (FYR). Mr. Holmes responded that findings available prior to the next FYR revision would be included. Review comments from Army Environmental Legal Division (ELD) should be received in early September and, depending on the level of comments, it will take 2 to 3 weeks to complete the FYR revision for submittal to EPA and TDEC. At that point, HDR would include findings obtained to date on the VI Study, Conceptual Site Model (CSM), and risk assessment.

Ms. Lloyd stated that they should still be able to make a short-term protectiveness statement at the end of the document. Mr. Holmes concurred. Mr. Foster stated that their attorney will need a heads up and a 30 day window to respond. Ms. Hutton stated that she was keeping ELD informed on the schedule. Mr. Holmes noted that the FYR is a primary document and will need to be reviewed and approved by EPA prior to completion date of 23 January 2018.

Recent LTM Results and SRI (Recommended Phase 3 Well Locations, SRI Phases 1 and 2 Report, Internal Draft)

Mr. Holmes stated the Supplemental Remedial Investigation (SRI) Phases 1 and 2 Report was submitted for internal review on 25 August 2017 and that Figure 30, Recommended Phase 3 Well Locations was included as the second figure in the handout. The SRI Phase 1 and LTM results were used to identify data gaps and 29 well locations in the Phase 2 work plan. Based on available funding and access, ten wells were installed during Phase 2 and the remaining 19 wells are to be installed in Phase 3.

He discussed the recommended well locations, including intermediate aquifer well I-1 located offsite from the northwest MI where access has been a particular problem. Also, one location (F-28 on the figure) was added and a previously recommended location southwest of MW-270 was deleted based on recent analytical results and groundwater elevations near MW-270. Well MW-263 on the northern boundary of the MI has groundwater contaminants similar to the off-site plume north of the MI, indicating the plume may be larger than currently thought. An off-site well (F-14) is planned for Phase 3.

Location: Memphis Depot Industrial Park, Building 271, 2249 Truitt Street, Memphis, Tennessee

Groundwater flow in the fluvial aquifer, shown by groundwater elevation contours on the figure, is on to the MI from all sides and groundwater flows off the MI through vertical migration into the window in the northwest or the sink in the south-central MI. Jamie Woods asked if there was a confining layer in wells located within the sink and Mr. Holmes replied that clay was observed at the base of the fluvial aquifer in those wells. A Phase 3 IAQ well (I-2) is planned in that area.

Mr. Foster asked the cost for well installation. Mr. Holmes responded that the rough costs were \$10-15 thousand for a fluvial aquifer well and \$30-35 thousand for deeper wells. Mr. Foster suggested the team not hold back on the number of wells because it would be more beneficial in the long run to provide a more accurate diagnosis/analysis. Ms. Lloyd stated that for this site the best way to go is to put a well where needed to aid the design of remedial activities. Mr. Holmes stated that well installation on the MI had not been a priority in the past because the focus was on the higher groundwater concentrations at Dunn Field. Now, groundwater concentrations on Dunn Field have been significantly decreased and groundwater concentrations on the MI appear to be more of a hold-up in meeting remedial action objectives (RAOs). Remediation will be different than Dunn Field and more difficult due to the diffuse plumes.

Mr. Foster asked how many more wells will be installed. In response, Mr. Holmes stated that 19 wells are to be installed in Phase 3 and 14 wells in Phase 4. Jay Foster stated that he would like to discuss funding and implementation with Ms. Hutton and Ms. Roebuck based on HDR's suggestions. Tom Holmes suggested that one possibility was to move some of the Phase 4 wells into Phase 3. Additional discussion will take place to further determine the course of action during preparation of the Phase 3 work plan. Mr. Foster and Ms. Hutton discussed the time line for funding and he suggested they get ideas together by November 1 and have everything worked out by January 1.

Mr. Foster noted that the issue showed the need for a focus on the end-state. Mr. Woods asked about the future MI remediation and if an RAO was going to be added to the MI for vapor. In response, Tom Holmes stated that the appropriate remedial action has not been decided and that actions and RAOs will be considered as the SRI and other studies, including vapor intrusion, near completion. Ms. Lloyd agreed that VI may need to be addressed in the RAOs, and Mr. Woods stated the evaluation could be based on sampling.

Mr. Holmes noted off-site contamination coming on to the MI in the southwest and the northeast would need to be considered. Also, potential off-site migration in the intermediate aquifer at the northwest MI makes a well near location I-1 (on the Belz property) critical.

Ms. Hutton stated the team had looked at where MCLs were exceeded and what was needed to delineate the plumes; that's why there were a lot of new wells to be installed. Mr. Holmes suggested the USEPA and TDEC consider the current delineation during review of the April 2017 LTM report. Ms. Hutton also asked if the regulatory expectation was to delineate plumes to non-detect or to concentrations below MCLs? Ms. Lloyd did not think non-detect results were needed but would look at groundwater concentrations below MCLs that demonstrated sustained downward concentration trends.

Location: Memphis Depot Industrial Park, Building 271, 2249 Truitt Street, Memphis, Tennessee

Todd Calhoun asked whether the team should prioritize individual plumes. In response, Tom Holmes stated that the key objective at present was to identify all areas with groundwater contamination. When the MI ROD was approved there were only two identified plumes, TTA-1 in the southwest MI and TTA-2 in the southeast MI. There were wells outside these areas with concentrations above MCLs but further investigation was not prioritized. A lot of wells have been installed since then, additional plumes identified and there are multiple aquifers to consider. The RAOs require all groundwater on the MI to be below MCLs although the shallow is not a source of drinking water. Mr. Holmes stated that the priorities may depend on results of the VI study. If VI is not found to be an issue, the first priority would be to protect the Memphis Aquifer and the second to develop a plan for the Fluvial Aquifer.

Jamie Woods stated that priorities should focus on exposure pathways to protect human heath and the environment; TDEC wants to protect the groundwater pathway through the Memphis Sand and the VI pathway for buildings. Diedre Lloyd agreed with Jamie Woods and stated that exposure pathways would provide direction on the system design and focus for remediation. Jamie Woods stated that plans for redevelopment will need to keep this in mind.

Mayfield Redevelopment – Recommended Action for Impacted Wells (8/16 email Table and Figures)

Joan Hutton stated that Mayfield came to Army several months ago, stated what they wanted to do, and asked if there would be any environmental implications. At this point, Army has provided them with a lot of information and asked that Mayfield work with their attorney to identify issues that require additional input from ELD.

Joan Hutton provided an overview on the properties that Mayfield owns or has included in their redevelopment and the wells that are within the proposed footprint, referencing the table and three figures in in the handout. There are basically 31 wells that are impacted; the wells are screened in the Fluvial Aquifer and Intermediate Aquifer/Upper Claiborne. Abandoned wells within the footprint were also considered. Mayfield's initial plan was to excavate 6 feet of soil under the existing buildings following demolition but has reduced that to 2-3 feet. Joan Hutton stated that the abandoned wells should be cut below Mayfield's deepest depth of disturbance to prevent the wells becoming conduits for contamination.

Jamie Woods recommended they conduct sub-slab vapor sampling and consider entering the voluntary program for continued reuse of the property after redevelopment.

Diedre Lloyd stated the main consideration was that DDMT is a Superfund/NPL Site and will require Occupational Safety and Health Administration (OSHA) trained personnel and submittal of a SAP. Once they excavate the soil, it becomes their responsibility. Secondly, they need to understand the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability issues ("joint and several") regarding contamination. Diedre Lloyd will discuss this with an EPA Region 4 lawyer once she receives the SAP.

Jay Foster stated the Army identified the issue of liability under CERCLA during initial discussions. He is not sure Mayfield has a clear understanding of the environmental issues and believes they need an environmental specialist. Mr. Foster suggested they address VI before construction and

Location: Memphis Depot Industrial Park, Building 271, 2249 Truitt Street, Memphis, Tennessee

strongly suggest they follow EPA and TDEC's guidance. Mr. Foster stated that the goal is to make sure they understand the liability, while letting them know Army wants to see the project succeed. Army will help where they can but laws need to be followed and taking the necessary steps up front will be to their benefit.

Diedre Lloyd reiterated that before anything is done a SAP needs to be submitted. Jay Foster stated that Mayfield has been provided copies of the original deed which included the environmental protection provisions.

Joan Hutton stated that she would like the Army to provide recommendations for the impacted wells to Mayfield. The team discussed all of the locations and selected wells that need to be relocated, except for MW-258 and MW-280 which will be discussed further. Late in the discussion, the team opted to retain the location of all wells within new building footprints. Ms. Hutton stated the tables and figures would be revised for discussion on the next team call and then she would send final recommendations to Mayfield.

Lunch was provided at the meeting location. Following that, the discussion continued with the Dunn Field agenda items; the discussion was brief in order to provide time for the site tour and to finish before 2 pm in order for attendees to catch return flights.

DUNN FIELD

Recent LTM Results (Dunn Field Fluvial Aquifer TCE Concentrations, April 2017 LTM Report)

Mr. Holmes reviewed the TCE results from the April 2017 LTM event which showed remaining areas of contamination. He noted there are a couple of small areas exceeding the MCL on Dunn Field and to the west toward the AS/SVE system. The areas on Dunn Field represent locations with some rebound in concentrations but only require continued monitoring at present. MW-159 near the AS/SVE system exceeds the remediation standard and Trinity will install additional air sparge (AS) wells in that area.

Mr. Holmes stated the off-site plume at the north end of Dunn Field was the main issue for completion of remedial action at Dunn Field. The objective for contamination on Dunn Field is to reduce concentrations to below the remediation standard of 50 parts per billion, but concentrations in the off-site plume are below that level at the west side of Dunn Field. Ms. Hutton discussed the plan to look at existing wells installed by TDEC northeast of Dunn Field. Mr. Foster asked how that would be funded and agreed with Ms. Hutton that requirements would be determined by November 1, 2017.

AS/SVE Effectiveness (AS/SVE System, Fourth Five-Year Review)

Mr. Holmes briefly reviewed the AS/SVE figure in the handout. He stated the effectiveness of the system was shown by the TCE concentrations in monitoring wells adjacent to the air sparge wells; all are below the MCL. Only MW-159 which is upgradient of the AS/SVE system exceeds the standard; that will be addressed by additional AS wells as noted above. Groundwater concentrations near the system met the remediation standard within six months to one year following the initial AS/SVE implementation in 2009.

Location: Memphis Depot Industrial Park, Building 271, 2249 Truitt Street, Memphis, Tennessee

MIP Survey (MIP Survey and Soil Sample Locations and Results)

Todd Calhoun discussed the MIP survey in the northeast corner of Dunn Field. The MIP pulls soil vapor into the probe as it is advanced and various tools provide measurements of the vapor; the primary measurement was the halogen-specific detector (XSD) which is used for identification of chlorinated VOCs in the subsurface. The groundwater in the area is relatively shallow at a maximum depth of 30 feet. The results were discussed using the figure in the handout showing MIP and soil confirmation sample locations and results. Mr. Calhoun noted the area with difficult access due to the slope and concrete culverts; only soil samples were collected at that location. Only one soil sample had a CVOC (PCE) detected and that was a low concentration below the standard reporting limit. Mr. Calhoun stated the primary purpose was to identify a source area if present; no source was found which is consistent with the historical record. Ms. Hutton noted the MIP survey was a line of evidence for an off-site source of the groundwater plume. Mr. Calhoun stated that USEPA and TDEC comments on the MIP survey report were due on 26 September.

OTHER ISSUES

Off-Site Access

Ms. Hutton briefly discussed the status in obtaining access from MLGW for the new AS wells and from other property owners for off-site Phase 3 SRI wells. Mr. Holmes stated that, other than the I-1 well location, the off-site Phase 3 wells were on city right-of-way or on property where access had been granted previously.

Submittal Schedule

A schedule for regulatory review of current project documents was provided to the attendees.

EPA and TDEC comments

Ms. Lloyd and Mr. Woods did not have anything to add to their comments during the previous discussion.

SITE TOUR

A brief site tour was made with points of interest noted on the Main Installation, not including the Barnhart Crane property on the western MI; Dunn Field, including the Source Area remedial actions and the MIP survey area; the Rozelle Street area immediately west of Dunn Field; and the AS/SVE area.