




THE MEMPHIS DEPOT TENNESSEE


ADMINISTRATIVE RECORD COVER SHEET

AR File Number 911



Environmental Restoration Program Update

Presented by




Solutions Today for a Sustainable Tomorrow

Tom Holmes, Project Manager
engineering-environmental Management Inc.

Memphis Depot Restoration Advisory Board Meeting
September 20, 2007

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1



Updates:

- Main Installation Remedial Action (RA)
- On Field Source Areas RA
- On Field Off-Depot Groundwater Remedial Design
- Year Review
- Steps

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2

MAIN INSTALLATION**Enhanced Bioremediation Treatment (EBT)**

- Enhances a natural process that exists in the environment to break down solvents in groundwater.
- Treats groundwater in two areas in the shallow aquifer where concentrations of solvents are the highest.

Managed Natural Attenuation (MNA)

Utilizes a natural process that will improve the groundwater conditions over time.

Treats groundwater containing low levels of solvents in the shallow aquifer.

Leakage Controls (LUCs)

Restricts certain activities on the site to ensure the protection of human health over the long term.

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3

MAIN INSTALLATION

MAIN INSTALLATION



Enhanced Bioremediation Treatment

September 2006: Completed construction and began sodium lactate injections.

Target Treatment Area 1 (TTA-1): 37 injection wells

Target Treatment Area 2 (TTA-2): 12 injection wells

November 2006: Completed first quarterly groundwater sampling event with findings reported at April 2007 RAB.

March 2007: Completed second quarterly groundwater sampling event.

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5

MAIN INSTALLATION



Enhanced Bioremediation Treatment

Criteria for EBT Operating Properly continue to be met through the second quarter

Well Installation: Completed installation of the injection wells and performance monitoring wells.

Lactate Distribution: Lactate present in monitoring wells in the MW-101 area of TTA-1 and in TTA-2. Have increased injection volume in MW-21 area of TTA-1 MW-21 area.

Injection Volume: Met the planned injection volumes.

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6

MAIN INSTALLATION



Enhanced Bioremediation Treatment

Criteria for EBT Operating Successfully continue to be assessed through the second quarter

Anaerobic Conditions Created: Trend toward anaerobic conditions continues. Continue groundwater monitoring.

Anaerobic Conditions Maintained: Demonstrated most of TTA-1 and TTA-2. Continue groundwater monitoring.

Concentrations Decrease: Average trichloroethene (PCE) and Trichloroethene (TCE) concentrations have declined in TTA-1 and TTA-2. Continue groundwater monitoring.

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7

MAIN INSTALLATION



Monitored Natural Attenuation

April 2007: Installed 27 additional monitoring wells and completed a semiannual groundwater sampling event.

Criteria for MNA Operating Successfully continue to be assessed by groundwater sampling.

Contaminant levels being reduced as expected.

Expected rate of contaminant loss established.

Volume is stable or retreating.

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8

MAIN INSTALLATION**Summary**

Completed first year of bi-weekly EBT Injections.

Continue monthly EBT injections for the next year.

Continued monitoring performed for EBT and MNA areas.

Site Inspections performed since 2005 in accordance with Land Use Control Implementation

to achieve cleanup goals in the EBT areas after end year (Fall 2008).

to achieve cleanup goals in the MNA areas by 2015.

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9

DUNN FIELD

Completed Dunn Field Source Areas Remedial Design (RD) in April 2007.

- Reviewed and approved by the EPA and TDEC.

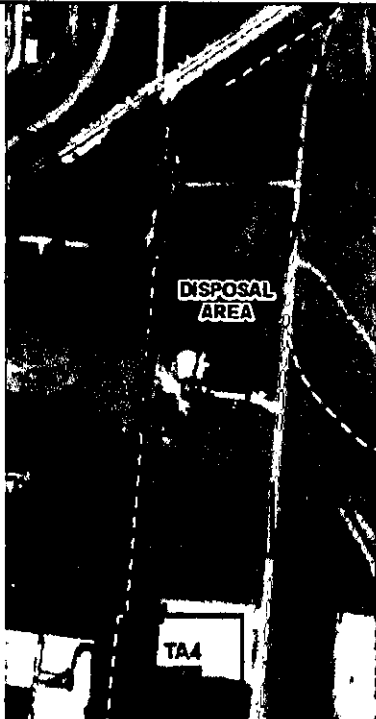
Completed Public Briefing on May 10, 2007.

Source Areas RA will be completed in a phased approach to reduce Chlorinated Volatile Organic Compound (C) levels in subsurface soils prior to treating the groundwater:


- Soil Vapor Extraction (SVE) in the Fluvial aquifer (July 2007)
- Limited Excavation, Transportation and Disposal (ET&D) (October 2007)
- Thermally-enhanced SVE in the Loess deposits (October 2007)
- Zero-Valent Iron (ZVI) injections (2009)

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10

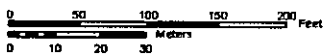


DUNN FIELD

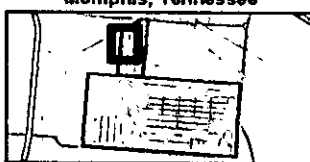


Remedial Action


1:1,500



Installation Location
Memphis, Tennessee




Date: January 2007
Edition: Draft



09 20 RAB Presentation 11

DUNN FIELD



Fluvial SVE System

Construction completed in July 2007

- Placement of a fenced treatment compound.
- Installation of 7 SVE wells and 10 vapor monitoring points.
- Installation of conveyance piping from individual SVE wells to the treatment compound.

through the soil to an extraction system that
ts and safely removes the CVOCs.

treated with carbon and sampled to ensure compliance with
an Air Act requirements and operating permit.

ndensate from air collected for disposal via the existing
underwater recovery system.

egan operating on July 25

e operating the Fluvial SVE system for 5 years.

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DUNN FIELD



Fluvial SVE System

Encountered materials during installation of SVE wells and conveyance piping

Encountered 55-gallon drums and black, tar-like substance was sampled and analyzed for Target Compound List/Target Analyte List substances. Results indicate substance is a heavy hydrocarbon. Removed the drums and impacted soil to a roll-off container. Collected samples for disposal characterization.

Material disposed as non-hazardous waste at Waste Management landfill in Tunica, MS.

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13

DUNN FIELD



Fluvial SVE System

Vapor treatment

- Extracted vapor had high CVOC levels at start-up; levels decreased by factor of 50 during the first week (10,000 ppm to 200 ppm).

Monitoring results indicated the carbon filter units had reached operational capacity and the system was shut down on August 1.

Replaced the carbon filters on August 13 and restarted the system.

Monitoring results from the carbon filter units were all below levels permitted by the Memphis/Shelby County Health Department.

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14

DUNN FIELD



Loess/Groundwater Remedial Action

EPA and TDEC reviewing Final Loess/Groundwater Remedial Action Work Plan. Approval expected by September 24, 2007.

Upon approval, the Loess/Groundwater Remedial Action Work Plan will be available in the Information Repositories for public information.

Installation of T&D and construction of the thermally-enhanced SVE system in the Loess scheduled to begin in October 2007.

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15

DUNN FIELD



EPA and TDEC review of Pre-Final Off-Depot Groundwater RD completed in September 2007.

Submit Final Off-Depot Groundwater RD to EPA and TDEC in November 2007 for review.

Final Off-Depot Groundwater RD approval expected in November 2008.

Upon approval, the Final Off-Depot Groundwater RD will be available in the Information Repositories for public information.

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16

DUNN FIELD



Changes based on new information since signing of the Dunn Field Record of Decision (ROD) in April 2004.

BRAC Cleanup Team (BCT) determined that a ZVI Permeable Reactive Barrier is not the most effective remedy for the Off-plume.

highly variable clay surface
high groundwater velocity
construction challenges
supplemental technologies required

Bioremediation Treatment proposed as remedy for Off-plume.

BT has been successfully implemented on Main Installation.

remedy requires a Revised Proposed Plan and Amendment to the Dunn Field ROD.

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17

DUNN FIELD



The Dunn Field Revised Proposed Plan is a synopsis of the changes DLA proposes to the selected remedy.

- Public comment period follows agency approval.

The Dunn Field ROD Amendment is the official documentation of the remedial alternatives and selection of the revised remedy. The ROD Amendment contains:

information used to determine a change in remedy is necessary and the remedial alternatives evaluated.

selected remedy for achieving the cleanup goals to protect human health and the environment.

responses to public comments.

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18

DUNN FIELD

EPA and TDEC reviewing draft Revised Proposed Plan and draft ROD Amendment.

Submit Final Proposed Plan to EPA, TDEC for review and a Public Comment Period to follow.

Final Dunn Field ROD Amendment through EPA and TDEC. Approval expected in April

Upon approval, the Final ROD Amendment will be available in the Information Repositories for public information.

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19

MAIN INSTALLATION AND DUNN FIELD

Five-Year Review requirement applies to remedial actions selected under CERCLA where the remedy does not allow for unrestricted reuse.

- Comprehensive Environmental Response Compensation and Liability Act (CERCLA).**

every five years after the start of a remedial

and discharge system installed at Dunn Field in January 1998 as an Interim Remedial Action.

First Five-Year review was completed in 2003.

Next Five-Year Review to be completed in January 2008.

Responsible for conducting the review and providing the information to EPA, TDEC and the community.

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20

MAIN INSTALLATION AND DUNN FIELD

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The purpose of the Five-Year Review is to determine if the selected remedial action continues to:

- Be protective of human health and the environment.
- Meets the objectives identified within the Record of Decision.

Five-Year Review process includes:

- Notifying regulators, community and other stakeholders.
- Collecting information via site inspection, document review and stakeholder interviews.
- Technical evaluation and conclusions.
- Preparing and delivering a Five-Year Review Report to regulatory agencies and the community.

Approval, the Final Report will be available in the Information Repositories for public information.

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21

MAIN INSTALLATION AND DUNN FIELD

F



DLA involves the community in the process by:

- Notifying the community of the start of the Five-Year Review process.

- Accepting comments on the selected remedies.

• Informing the community about the Review process.

• Notifying the community upon completion of the review process.

• And placing the Final Five-Year Review Report in the Information Repositories for public information.

Five-Year Review is:

- Consistent with past practices and with our public mission to promote human health and the environment,
- Complies with Federal and State regulations.

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22

MAIN INSTALLATION AND DUNN FIELD

F

**Selected remedies being reviewed:*****Main Installation Record of Decision approved in 2001***

- Excavation, transportation, and off-site disposal of approximately 7,200 square feet of surface soil containing lead near Building 949.
- Land use restrictions and site controls on residential land use, daycare facilities, drilling and groundwater use, and site access.
- Enhanced bioremediation of Chlorinated Volatile Organic Compounds (CVOCs) in the most contaminated part of the groundwater plume.
- Long-term groundwater monitoring.

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23

MAIN INSTALLATION AND DUNN FIELD

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**Selected remedies being review:*****Dunn Field Record of Decision approved in 2004***

- Excavation, transport, and off-site disposal of soil and material contained within selected disposal sites.
- Use of soil vapor extraction (SVE) to reduce VOC concentrations in subsurface soils.
- Injection of zero-valent iron (ZVI) within Dunn Field to treat CVOCs in the most contaminated part of the groundwater plume.
- Installation of a permeable reactive barrier (PRB) to treat CVOCs within the off-site areas of the groundwater plume.
- Monitored natural attenuation (MNA) and long-term groundwater monitoring (LTM).
- Implementation of land use controls.

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24

MAIN INSTALLATION AND DUNN FIELD

F



A Five-Year Review is now underway.

**To comment on the protectiveness
the selected remedy or the remedial actions
at the Memphis Depot, please call the
Community Relations Line at
(901) 774-3683.**

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25

Continue Main Installation Remedial Action (RA).

Complete Loess/Groundwater RA Work Plan.

Continue Dunn Field Source Areas RA.

Operate Fluvial Soil Vapor Extraction (SVE) system.

**Begin limited ET&D and thermally-enhanced SVE in
the Loess.**

**Complete Revised Proposed Plan and Public Comment
period.**

Plan is based on current information and may be subject to change

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26



Complete Dunn Field ROD Amendment

**Complete Five-Year Review for Main Installation and
Dunn Field.**

Complete the Main Installation RA.

Complete the Dunn Field Source Areas RA.

**Complete the Off-Depot Groundwater RD and conduct
public briefing.**

Complete the Off-Depot Groundwater RA.

Presentations based on current information and may be subject to change

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27



**Complete Five-Year Review for Main Installation and
Dunn Field.**

**Receive EPA 'Operating Properly and Successfully'
(OPS) Determination for the Main Installation RA.**


**Complete Finding of Suitability to Transfer (FOST) #5
Main Installation.**

Complete public involvement.

Presentations based on current information and may be subject to change.

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28



Continue long-term monitoring Main Installation RA
Continue Dunn Field Source Areas RA.
Continue Off-Depot Groundwater RA.
Continue public involvement.

Presentations based on current information and may be subject to change.


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Receive OPS determination for Dunn Field Source Areas and Off-Depot Groundwater RAs.
Receive EPA approval of Preliminary Closeout Report.
Complete FOST #6 for Dunn Field.
Continue public involvement.

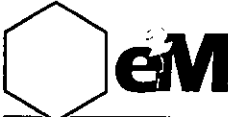
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 2007 09 20 RAB Presentation

31

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE