



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 42

EXECUTIVE SUMMARY
Defense Depot Memphis, Tennessee
Generic Remedial Investigation/
Feasibility Study Work Plan
U.S. Army Corps of Engineers-Huntsville Division
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INTRODUCTION

In October 1992, the Defense Depot Memphis, Tennessee (DDMT), was placed on the National Priorities List (NPL) by the Environmental Protection Agency (EPA). Therefore, the Depot must fulfill requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and National Contingency Plan (NCP). A Remedial Investigation/Feasibility Study (RI/FS) must be prepared to determine the nature and extent of contamination, evaluate the risk to human health and the environment, and to screen potential cleanup actions. The RI/FS Work Plan was prepared to show how the investigation and study would be accomplished.

DESCRIPTION OF WORK PLAN

The Work Plan includes a facility description, background information, findings of previous studies, and potential ways contamination may have reached and affected people. Preliminary information on potential applicable or relevant and appropriate requirements (ARARs) and preliminary cleanup goals are presented. A Quality Assurance Project Plan (QAPP) and a Health and Safety Plan (HASP) have been prepared. The QAPP describes general sampling procedures and quality assurance/quality control (QA/QC) procedures to be used so that the quality and quantity of the information is adequate to determine the nature and extent of the contamination. The HASP was prepared to provide procedures for the safety and health of facility personnel and the general public during the investigation at the Depot. Included in the HASP are the assignment of responsibilities, employee training requirements, medical surveillance requirements, and a list of substances with possible routes of exposure and symptoms of acute exposure.

In order to look at the installation in steps, the Depot is divided into four Operable Units (OUs). Dunn Field is designated OU-1. The main installation is divided into three areas: the southwestern quadrant, OU-2; the southeast lakes and golf course area, OU-3; and the north central area, OU-4. Substances found in OU-1 probably resulted from use of the area for landfill operations, mineral stockpiles, pistol range use, and pesticide storage. Potential contamination of OU-2 could have resulted from spills or releases from the hazardous material storage and repouring area, sandblasting and painting activities, or both. Storage of polychlorinated biphenyls (PCBs) and the use of pesticides and herbicides are potential sources of contamination for OU-3. Principal contamination in OU-4 probably resulted from a wood treatment operation and hazardous material storage.

Information from previous investigations, plans, and procedures which applies to all OUs are discussed in the Generic RI/FS Work Plan. OU-specific plans are discussed in Field Sampling Plans (FSPs) for each OU. Additionally, a separate FSP for screening sites is being prepared. Screening sites are those sites where additional information is needed to determine whether they warrant RI/FS or No Further Action.

PREVIOUS STUDIES

Soil

Previous studies indicated that soil contamination at the Depot included the following substances:

- OU-1 pesticides and polynuclear aromatic hydrocarbons (PAH)
- OU-2 PAHs, metals, pesticides and PCBs
- OU-3 PAHs and metals
- OU-4 PAHs, pesticides, metals and volatile organic compounds (VOCs)

Two potential pathways of exposure due to past waste disposal and material storage practices at OU-1 include possible groundwater contamination and surface water runoff. The primary concern is the possibility of groundwater contamination. OU-1 is located above a shallow aquifer, the Fluvial Aquifer. Although this aquifer is thought to be separated by a clay layer from the deeper Memphis Sand Aquifer, which serves as the drinking water supply for the Memphis metropolitan area, interconnections between the two aquifers could possibly allow contamination to reach the Memphis Sand Aquifer.

Groundwater

Groundwater beneath Dunn Field (OU-1) contained the following contaminants:

- VOCs
- chlorinated compounds
- metals including chromium, lead, and mercury
- other less widespread potential contaminants included arsenic and barium

Groundwater monitoring results from the main installation failed to detect any consistent pattern of contamination, and the levels of contamination were much lower than those found at OU-1. Again, the primary concern is the potential risk to human health from the possible contamination of the Memphis Sand Aquifer.

Surface water

Surface water analysis from all OUs indicated that little or no risk existed from exposure because the surface water is not used for drinking water or recreation. Metals and pesticides were present but not in large enough quantities to pose an immediate health risk.

Sediment

Sediment collected from Lake Danielson and the golf course pond contained pesticides and PAHs, but again human exposure potential is low.

HEALTH RISKS

Based on a preliminary assessment of the potential health risks from contaminants in soil, groundwater, surface water, and sediments revealed that the primary concern was chlorinated organic compounds contained in the Fluvial Aquifer, which could affect the Memphis Sand Aquifer. Of secondary concern are hazardous constituents found in relatively high concentrations in some areas of the soil. Contamination of surface water and sediments have no apparent public health effect because of limited exposure opportunities.

CLEANUP ACTIONS

Cleanup actions will be based on the contaminants, future land use, potential exposure levels, regulations, and site conditions. The objective of groundwater remediation will be to stop the migration of contaminants and eliminate the contamination that threatens the Memphis Sand Aquifer.

The objectives of the soil remediation will be to prevent the possibility of ingestion, limit surface water runoff, and prevent migration of contaminants to the groundwater. The objectives of the surface water cleanup are to protect aquatic life and mitigate surface water contamination during peak storms.

The ultimate goal of the RI/FS is to select cost-effective, cleanup actions that minimize threats and provide protection for public health and the environment. To accomplish this, the nature and extent of the release of hazardous substances to the Fluvial Aquifer must be identified, the source of release must be determined, and proposed cleanup actions must be evaluated. The following table provides a list of the RI/FS objectives and the activities necessary to achieve those objectives.

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