EXECUTIVE SUMMARY

This report details the results of Phase I of a RCRA Facility Investigation (RFI-Phase I) at 27 suspected releases solid waste management units (SWMUs) at the Tooele Army Depot South Area (TEAD-S), near Tooele, Utah. The RFI-Phase I is one of the requirements of module VII of the Chemical Stockpile Disposal Program permit for the site. The purpose of the report is to assess the presence or absence of contamination at each SWMU and to recommend further investigation wherever appropriate. Also it is Army policy to integrate the RCRA Corrective Action process with the National Environmental Policy Act (NEPA) requirements for considering the environmental impacts of proposed investigations and corrective actions. With the integration of NEPA requirements into this RFI, the RCRA process is the functional equivalent of NEPA. Recommendations for further investigation are based both on determinations of the need for data to make RCRA Corrective Action decisions as well as the environmental impacts expected from conducting these proposed investigations. The assessment has included compilation of historical, field, and chemical analytical data from nine previous environmental investigations of the site. An RFI-Phase I field program consisting of a primary sampling event in the summer of 1990 and an additional sampling event in June 1992 provided data to supplement the information found in these previous studies.

TEAD-S is a 19,355-acre area approximately 35 miles southwest of Salt Lake City in north central Utah. It is located on sloping ground in a semiarid intermontane valley. Ephemeral streams cross the site, carrying runoff from mountain snowmelt. The surrounding area has a low population density; however, groundwater is extracted in the area for domestic use, stock watering, and mining operations.

The 27 SWMUs investigated by the RFI-Phase I include:

- Three large open burning, open detonation areas for conventional and Army agent munitions disposal SWMUs (1, 25, 31–active)
- Five landfills and one scrapyard for sanitary, construction, and metal scrap wastes (26-active, 28, 29, 30, 32)
- Four areas of formerly used munitions and other hazardous waste disposal pits (2, 3, 4, 15)
- Three areas connected with former munitions washout operations (5, 21, 22)
- Two large munitions storage areas (9, 11-active)
- Three buildings used for drummed waste storage (19, 33-active, 34-active)

- Seven miscellaneous SWMUs related to munitions testing, handling, and disposal, vehicle maintenance, and sewage treatment (8, 14, 20, 23, 27-active, 36, 37)

In addition to these SWMUs, eight meteorological stations were investigated because of reported spills of mercury-containing solutions used in the monitoring equipment.

The locations and histories of these SWMUs have been extensively researched through aerial photography interpretation, employee interviews, document searches, site visits, exploratory excavation, and screening techniques including soil gas sampling and analysis and a magnetometer survey. This RFI-Phase I report includes discussion of chemical analytical and other data collected through soil, surface water, sediment or groundwater sampling at 21 of the 27 suspected releases SWMUs. These data include the results of groundwater sampling at 73 monitoring wells.

Chemical analyses were performed using EPA SW-846 methods and USATHAMA-certified methods, most of which were developed from SW-846 methods. Methods developed solely by USATHAMA were used for analyses of compounds for which no SW-846 method exists. The analytical program included volatile organic, semivolatile organic, explosive, chemical agent breakdown product, metal, anion, and radionuclide analyses. Some samples were also analyzed for total petroleum hydrocarbons or RCRA characteristics, where appropriate. Both EPA and USATHAMA quality control programs were followed, ensuring thorough scrutiny of the data quality.

A statistical approach was used for establishing background concentrations of naturally occurring analytes, but concentration variability across the site, as well as other factors, prevented determination of the background levels of many analytes; therefore, the contamination assessment of each SWMU is largely subjective.

Organic contaminants detected at suspected releases SWMUs at TEAD-S included: solvents; explosives; PCBs; fuel-related compounds attributed to burning of munitions with hydrocarbon fuels; phthalates, possibly related to sampling and laboratory equipment; and agent breakdown products. Detections of volatile, semivolatile, and explosive compounds in groundwater samples ranged up to approximately 100 µg/l, but were typically below 10 µg/l. Concentrations of these compounds in soil samples ranged up to approximately 90 µg/l, but were typically below 10 µg/g. Total petroleum hydrocarbons were detected in only one monitoring well at approximately 560 µg/l. In soils, total petroleum hydrocarbons were reported at one SWMU at concentrations ranging up to 260 µg/g. Agent breakdown products were detected in groundwater at five SWMUs during historical investigations, but the high-salinity groundwater is believed to have influenced these results. During the RFI-Phase I investigation these detections were not repeated. During the Phase I investigation agent breakdown products were detected in soils at only one SWMU at concentrations ranging from 4 to 1800 µg/g.

In most cases metals and anions were found at naturally high but variable levels in groundwater and soil. The detections were mostly attributed to natural conditions in the semi-arid environment in which the site is located. Elevated concentrations of some metals were attributed to waste storage, munitions storage, or munitions washout at some SWMUs. No anion or radioactivity contamination could be defined because of the large variability in the results.

Based on the results of the RFI-Phase I, no action is recommended at 10 of the 27 suspected releases SWMUs (2, 14, 15, 23, 26, 27, 28, 32, 34, 36) or at the meteorological stations. Additional sampling is recommended at 13 SWMUs (1, 3, 5, 8, 9, 11, 19, 20, 25, 30, 31, 33, 37) as part of the RFI-Phase II. It is recommended that the basin sediments in SWMUs 21 and 22 be removed and disposed of properly as hazardous waste. Also, the solid waste scrap metal at SWMU 29 should be removed to SWMU 26-Sanitary Landfill. SWMU 4 is believed to be included in another SWMU and should be omitted from the list of suspected releases SWMUs. Annual groundwater monitoring is proposed for 5 SWMUs (2, 3, 26, 28, 30) where wastes will remain buried during the RFI-Phase II program.

Phase II soil, sediment, and surface water sampling are proposed to assess the nature and distribution of detected contamination and investigate areas of potential contamination that have not previously been sampled. Proposed Phase II groundwater investigations include resampling 40 wells and installing and sampling 18 additional wells. Groundwater sampling is proposed mainly to confirm previous results or interpretations and to monitor for potential contaminant releases near SWMUs where buried wastes are known to exist. New wells will be used to define the distribution of groundwater contaminants in areas where potential exposures to these contaminants might occur.

Other recommended Phase II investigations include munitions and other hazard inventories in areas of open waste pits; air monitoring; soil gas surveys; building inspections; explosive risk determinations, and ecological surveys.