

LHAAP-17 Burning Ground No. 2/Flashing Area Group 2 Remedial Design Update

Site History and Current Remedial Design Status

LHAAP-17 is located in the southeastern portion of the Longhorn Army Ammunition Plant (LHAAP). The site encompasses approximately 3.9 acres and was used as a burning ground from 1959 through 1980. The materials removed from the TNT Production Area (LHAAP-29) and the TNT Waste Disposal Plant (LHAAP-32) during demolition were burned and/or flashed at LHAAP-17. Bulk trinitrotoluene (TNT), photo flash powder, and reject material from Universal Match Corporation operations were burned at LHAAP-17. The site was used as a flashing area to decontaminate recoverable metal byproducts until 1980, when it became inactive. The Final Proposed Plan identifies Alternative 4 – excavation and off-site disposal of soil, groundwater extraction, monitored natural attenuation, and land use control for groundwater as the selected alternative. Development of the remedial design for the final remedial action presented in the ROD was placed on hold from October 2011 to March 2016 as a result of a dispute between the Army and EPA over the ROD. Following dispute resolution, the Army prepared a draft revised ROD that is currently undergoing EPA and Texas Commission on Environmental Quality (TCEQ) review. Concurrently, the draft remedial design is being developed based on the draft revised ROD.

Site Chemicals of Concern and Potentially Affected Environmental Media

Surface drainage from LHAAP-17 flows to ditches along the eastern and western boundaries of the site to Harrison Bayou, which is located approximately 1,200 feet northwest of the site and discharges into Caddo Lake. The shallow subsurface soil at the site (up to 20 feet below ground surface) consists of silty clay /clayey silt and silty sand. These shallow deposits are underlain by up to 100 feet of silty sand and poorly sorted sand. The silty sand is interbedded with clay and silty clay lenses that result in two groundwater-bearing units identified as the Shallow Zone and Intermediate Zone. Groundwater at the site also occurs in a Deep Zone, but it is more than 150 feet below ground surface and is not impacted. The groundwater flow direction in both the Shallow and Intermediate Zones is generally toward Harrison Bayou to the northwest. The contaminated media include soil, and groundwater in the Shallow and Intermediate Zones. The main chemicals of concern (COCs) in soil at LHAAP-17 are explosives and perchlorate (potential soil COC based on groundwater concentrations) and chemicals of potential ecological concern (COPECs) are explosives, dioxin, and barium. Shallow Zone groundwater COCs are perchlorate and volatile organic compounds (VOCs) including trichloroethene (TCE), 1,1-dichloroethene (DCE), cis-1,2-DCE, 1,2-dichloroethane (DCA) and vinyl chloride (VC). Intermediate Zone groundwater COCs are TCE and its daughter products DCE and VC.

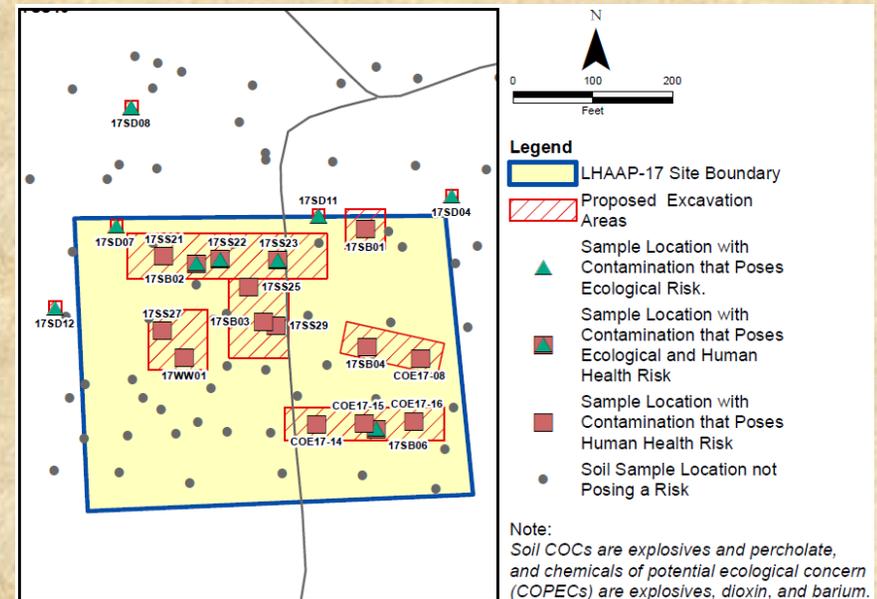


Figure 1: LHAAP-17 Proposed Contaminated Soil Excavation Areas

Human Health and Ecological Risk

The reasonably anticipated future use of LHAAP-17 is non-residential as part of the Caddo Lake National Wildlife Refuge. Human health risk was evaluated for a hypothetical future maintenance worker at the wildlife refuge. Under this scenario, the soil poses an unacceptable human health risk. It also poses a risk to groundwater through soil-to-groundwater cross-media contamination and to potential ecological receptors in the sub-area of the installation where LHAAP-17 is located.

Groundwater also poses an unacceptable health risk to a maintenance worker under the anticipated future land use scenario.

Remedial Action Objectives (RAOs)

The RAOs for LHAAP-17 are:

- Preventing exposure of the hypothetical future maintenance worker to contaminants in soil and groundwater.
- Preventing migration of contaminants to groundwater from potential sources in soil.
- Preventing exposure of ecological receptors to contaminated soil.
- Returning groundwater in the Shallow and Intermediate Zones to its potential beneficial use as drinking water.

Remedial Alternatives

A total of four remedial alternatives were developed to address the LHAAP-17 RAOs. Alternative 1 is the No Further Action alternative, which is always evaluated to represent site baseline conditions. Land use controls, monitored natural attenuation, inspection/long-term monitoring, and excavation with off-site disposal are technologies that are common to Alternatives 2, 3, and 4. In addition, Alternative 3 includes in-situ bio-remediation for groundwater contamination in the Shallow Zone, and Alternative 4 includes extraction of contaminated groundwater from the Shallow Zone.

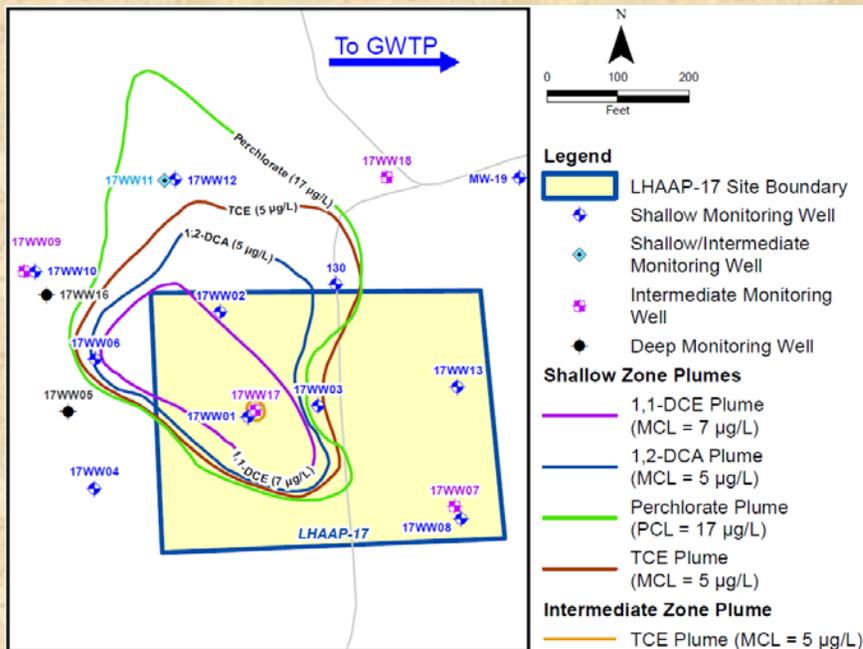


Figure 2: LHAAP-17 Groundwater COC Plumes in the Shallow Zone and Intermediate Zone

Evaluation of Remedial Alternatives and Selection of Proposed Alternative

All of the four remedial alternatives identified for LHAAP-17 were evaluated individually and comparatively against the nine criteria identified in the National Oil and Hazardous Substances Pollution Contingency Plan. Based on these evaluations, the Army identified Alternative 4 as the preferred alternative for LHAAP-17. It achieves the RAOs and is consistent with the reasonably anticipated future use of the site as a wildlife refuge. **Alternative 4 includes excavation and off-site disposal of soil, groundwater extraction, monitored natural attenuation, and land use controls for groundwater, with a contingency remedy of in-situ bioremediation if performance objectives are not met.** This satisfies the RAOs for LHAAP-17 for the protection of human health and the environment. All four alternatives were evaluated in the Feasibility Study and are summarized in the Final Proposed Plan for the LHAAP-17 site. Both documents are located in the Administrative Record. **Figures 1 and 2** show the areas of soil and groundwater contamination at LHAAP-17 that will be addressed by Alternative 4. A Pre-Design Investigation will be conducted at LHAAP-17 before the detailed remedial design for Alternative 4 can be completed. The pre-design investigation will include soil sampling to fully define the limits of contaminated soil for excavation and off-site disposal, and groundwater pump testing to support design of the groundwater extraction system. The remedial design will be subject to change, based on updated data and requirements of the revised Final ROD.