



ZONE 1 SOILS FACT SHEET

September 1999

A fact sheet describing alternatives for cleaning up the soils in Zone 1

The purpose of this fact sheet is to describe the proposed plan for cleaning up soil contamination in Kelly Air Force Base Installation Restoration Program Zone 1. The information includes a brief description and history of the zone, and an outline of remedial alternatives for Zone 1 soils.

BACKGROUND

Kelly Air Force Base (AFB) Installation Restoration Program Zone 1 is in the southwest corner of the base, north of Military Drive and adjoining Lackland AFB on the northwest. Westover Road forms the northeastern boundary of the zone.

Leon Creek, which receives flow from storms and groundwater infiltration, runs through Zone 1 from its northern extension toward the southeast. Zone 1 consists primarily of the Kelly Golf Course and parts of Security Hill, and is within the area of Kelly that will be realigned with Lackland AFB by July 2001 as part of the 1995 BRAC process.

The Navarro Escarpment divides Zone 1 into two areas with distinctly different geology and water concerns. The Leon Creek floodplain lies east of the escarpment, where a shallow aquifer flows generally toward the creek. West of the escarpment, largely the area known as Security Hill, the impermeable Navarro clay is exposed at the surface and no shallow alluvial groundwater exists.

Zone 1 contains 17 IRP sites (16 soil sites and one that includes all groundwater underlying the zone) in various stages of the regulatory process. A final cleanup plan for the groundwater in Zone 1, called a Corrective Measures Implementation Work Plan, was completed in 1998 to minimize the migration of contaminated groundwater to Leon Creek.

WHAT'S THERE AND HOW DID IT GET THERE?

The 16 soil sites include former waste handling areas, disposal sites and soil or rubble fill areas that were active at various times from the establishment of the base in 1917 to the 1970s.

The handling areas include waste staging areas and a sludge drying area. The disposal sites include landfills, cut and fill disposal trenches, a waste oil burning area, a lumber burning area and two low-level radioactive waste sites. Waste materials reportedly disposed of in the various sites may have included plating sludges, solvents, pesticides, waste oils, radioactive instruments, scrap metals and construction debris.

HOW WILL IT AFFECT ME?

Based on extensive soil data collected from Zone 1 during investigations as far back as 1982, a baseline risk assessment indicates that even direct exposure to the soils poses no unacceptable risk to human health.

Even in the case of a utility construction worker or groundskeeper on the golf course, the cumulative risks of cancer and non-cancer illnesses are below state and federal regulatory levels of concern for industrial exposure to the soil.

WHAT IS THE AIR FORCE DOING ABOUT IT?

One of the soil sites (FT023) has already been granted closure (meaning it has been cleaned up satisfactorily) by the Texas Natural Resource Conservation Commission. Three others are being reviewed for closure. The Air Force Radioactive Isotope Commission is regulating the two low-level radioactive waste sites.

Cleaning up the remaining 10 sites is the subject of a recently completed draft Corrective Measures Study (CMS) for Kelly AFB Zone 1. This study analyzes the alternatives for cleaning up the soils and recommends an appropriate method or set of methods for each site.

The greatest concerns for exposure to contaminants in Zone 1 are direct contact with contents of the landfills and the spread of contaminants to shallow groundwater and surface water.

Cleanup actions in Zone 1 will have four objectives:

- > Minimize the leaching of soil contaminants to the shallow groundwater
- > Prevent exposures to contaminated surface soil that pose unacceptable risk to public health
- > Prevent potential exposure to landfill contents
- > Perform the necessary additional measures to close landfills consistent with good engineering practices and state and federal requirements

RECOMMENDED ALTERNATIVES

From two to six alternative cleanup methods were examined for each site, beginning in each case with doing nothing, or "No Further Action" in regulatory language. In general, the higher the relative risk to human health and the environment at a given site, the greater the number of risk reducing options that were analyzed.

The five sites east of the Navarro escarpment are all former landfills.

D-1 (LF011) was used from 1917 to 1942 as a disposal area. The recommended alternative includes institutional controls and continued ground water monitoring.

D-2 (LF012) is a large site through which Leon Creek flows. It was used from 1942 to 1957, when it was closed and covered with several feet of soil. The golf course now covers much of the site. Soils in the vicinity of soil boring will be capped while the western part of the site will be re-graded and revegetated to ensure the soil cover is sufficient and to provide sufficient runoff of precipitation.

D-3 (LF013) was used from 1945 to the mid-1950s. When closed, it was covered with soil and re-seeded. The recommended remedial alternative includes institutional controls and continued groundwater monitoring.

D-4 (LF014) was used from 1950 to 1958 and is now covered by two feet of soil and grass. Soil vapor extraction will be used to clean up the soils in the vicinity of the soil boring, while re-grading and revegetation will be used to reduce the risk of the North 1 and 2 areas.

D-5 (LF015) was used in 1958 and 1959, and includes an evaporation pond. Fracturing-enhanced soil vapor extraction and phytoremediation are recommended for the evaporation pond, while re-grading and revegetation are recommended for the waste disposal area.

Four of the sites west of the escarpment also were used as disposal areas.

D-6 (LF016) was used from 1969 to 1961 and covered by two feet of soil when closed. Re-grading and revegetation are recommended.

D-7 (LF017) was used from 1961 to 1970 and is now covered mostly with grass. Re-grading and revegetation are recommended.

D-9 (LF001) is believed to have been used from 1945 to 1970. Re-grading, revegetation and phytoremediation are recommended.

Combined Site **CS-3 (SS043)** is a large site in a natural draw that was filled with construction rubble and other wastes in the 1950s and 1960s. Investigation found traces of organic and inorganic contaminants. Caps will be installed over the soils that exceed preliminary remediation goals.

Site SA-1 (WP029) is a sludge-spreading area used from 1948 to 1950. The site covered less than an acre and was closed with topsoil and seeded with grass. Soil vapor extraction is recommended for cleanup.

GLOSSARY

Cap - A layer of clay or other impermeable material installed over a closed landfill to prevent entry of rainwater and minimize leaching of contaminants downward into the groundwater.

Impermeable - Not easily penetrated. The property of a material or soil that does not allow the movement or passage of water, or allows it only with great difficulty.

Institutional Controls - Rules, restrictions or physical barriers intended to prevent people from being exposed to contaminated soils or water.

Phytoremediation - Direct use of living green plants to reduce the risk from contaminated soil, sludges, sediments and ground water, by removing, degrading or containing a contaminant.

Soil Vapor Extraction (SVE) - Cleanup method using vacuum pumps to collect and extract contaminant vapors from the soils. In some cases, it may be necessary to break up or fracture the contaminated soil layer to improve the collection of contaminant vapors (fracturing-enhanced SVE).

For More Information
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