THE FACTS

Information About Environmental Cleanup at McClellan AFB.

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Soil Vapor Extraction System - Progress at Investigative Clusters 1 & 7 in Operable Unit B

McClellan Air Force Base (AFB) has completed design of (and is currently installing) soil vapor extraction (SVE) systems at Investigative Cluster (IC) 1 and IC 7, both located in Operable Unit (OU) B (Figure 1). The placement and operation of these two systems are part of the Engineering Evaluation/Cost Analysis that allows McClellan to initiate a removal action quickly.

Historically, IC 1 (a 5.5 acre area) contained electroplating, radiator repair, and sandblasting shops. Additionally, hazardous waste was also stored at IC 1. IC 7 (a 15.5 acre area) contained washracks and a tanker fueling facility, underground storage tanks, paint and solvent spray booths, an oil storage yard, and an automobile repair shop.

Former activities at these two areas resulted in the release of volatile organic compounds (commonly found in solvents) into the soil.

The SVE systems are expected to remove most of these soil contaminants before they reach the water table. Contaminants reaching the groundwater, if any, will be captured and treated by the groundwater containment and treatment system that is currently being expanded.

The SVE System Removes Contaminants from the Soil

Using a network of vapor extraction wells, a vacuum sucks contaminants from the soil into the system. The contaminants in this air stream are then destroyed in an emissions control system (ECS).

The ECS consists of a catalytic oxidizer and a caustic scrubber system. In the catalytic oxidizer, the air stream will be heated with a natural gas burner to approximately 800 degrees Fahrenheit (°F). Then the air stream passes over a catalyst bed (a substance that speeds up a chemical reaction) where the contaminants are converted to carbon dioxide, water, and hydrochloric acid. The catalytic oxidizer is expected to remove over 98 percent of the soil contaminants from the air stream.

The use of a catalyst allows the destruction of contaminants to take place at a much lower temperature (approximately 800°F) than the temperatures of conventional incineration (1,600 to 1,800°F). Because of this lower temperature, the system produces less air pollution.

The acid gas generated as a by-product of the catalytic oxidation process is neutralized in the caustic scrubber system. The acid gas is introduced to a caustic solution (neutralizes acids) where it is converted to non-toxic byproducts such as sodium chloride and water. The scrubber system is expected to neutralize over 99 percent of the acid gas produced by the catalytic oxidizer.

The scrubber by-products are subjected to treatment and then discharged to the on-site Industrial Wastewater Treatment Plant. The treated air stream that exits the ECS is discharged through a stack 10 inches in diameter and 30 feet tall (see figure 2).

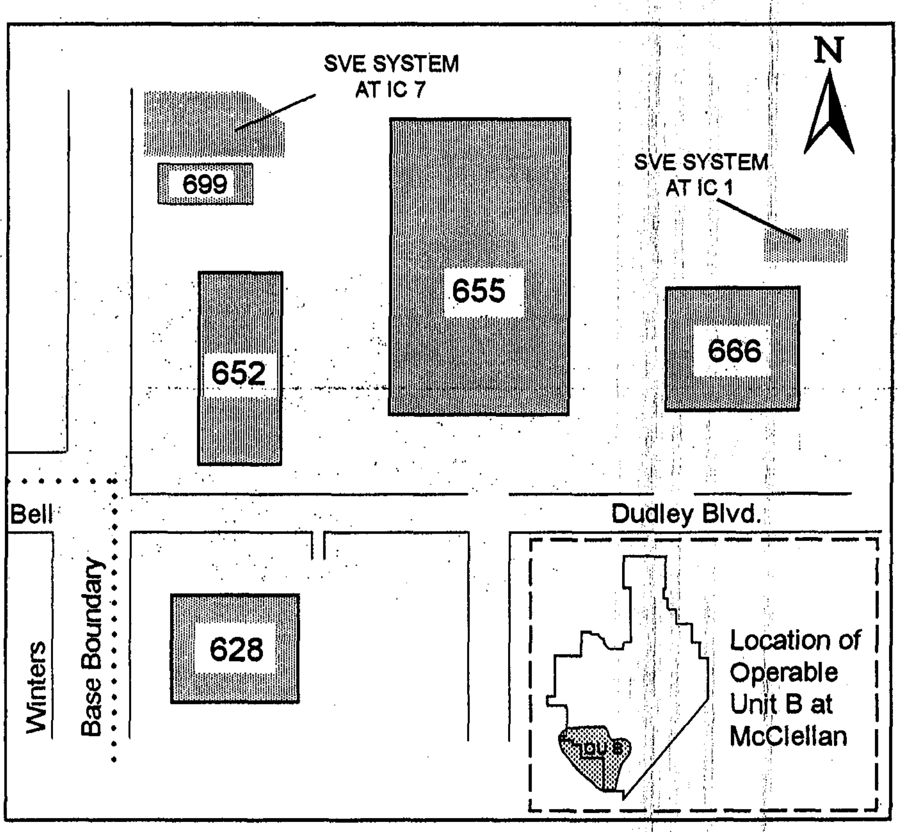

Figure 1: IC 1 and IC 7 Location Map

The SVE System is an Efficient System

The stack exhaust emissions will be evaluated by the U.S. Environmental Protection Agency (U.S. EPA), the California Environmental Protection Agency (Cal EPA), and the Sacramento Metropolitan Air Quality Management District (SMAQMD) to ensure that federal, state, and local air quality requirements are met. A human health risk assessment has been conducted to show that potential increased health risks that might be associated with the exhaust emissions are well within acceptable levels.

Preoperational noise sampling has been conducted by McClellan during evening hours. McClellan will mea-

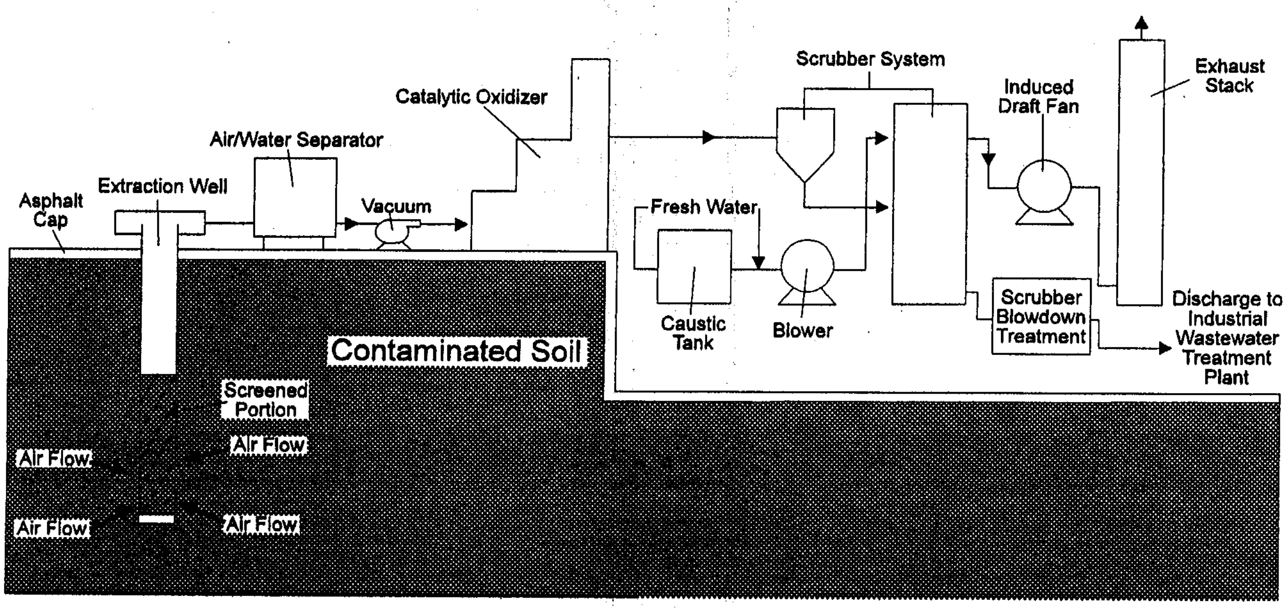

Figure 2 - SVE Schematic

sure the noise levels again when ICs 1 and 7 are operational to see if there is any measurable difference. McClellan will also ensure the levels are within the county's requirements. In an effort to help reduce noise, all noise-producing equipment on the two new systems has been enclosed to meet Occupational Safety and Health standards three feet from the noise enclosures.

Additionally, once the SVE systems are up and running, system performance and operation will be monitored closely to ensure effective operation.

The SVE System is an Excellent Performer

The SVE system design was based on the results of field studies, the nature and extent of the soil contamination, and experience with SVE at other sites. Based on field study results, the SVE system should remove 100 pounds or more of contaminants per day from the soils. These results will supplement the 12 pounds of contamination per day removed by the existing groundwater extraction and treatment system at McClellan AFB. These are just two more actions that McClellan is taking to clean up the base.

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