Edwards Air Force Base
Installation Restoration Program

IRP Update

November 2001

Site 25 System Slows Down Contaminants

This IRP Update describes the treatment system the Air Force has installed at Site 25.

The granular activated carbon system at Site 25 during construction. The two canisters on the left contain the carbon used to clean contaminants from groundwater.

The Air Force has installed a $2 million groundwater extraction and granular activated carbon system to slow down the spread of the solvent trichloroethene (TCE) groundwater contamination at Site 25. Site 25 is located 2 miles northwest of the NASA Dryden complex. Although groundwater from the site is not used as drinking water, contaminants are a concern because they exceed regulatory limits.

Groundwater and soil sampling have shown that the plume (area of contaminants in groundwater) stretches from the Main Base unconventional fuel storage area 6,000 feet down the hillside toward Dryden. In 1971, at the end of the XB-70 supersonic bomber program, an unknown amount of TCE was drained from a 9,000-gallon aboveground storage tank onto the soil at the fuel storage area. These contaminants seeped deep into fractured bedrock, and have been moving east with the groundwater since they were released. Groundwater underlies the site 20 to 42 feet below ground and flows slowly through fractures within the granitic bedrock.

The primary contaminant at the site is TCE. TCE is a chlorinated hydrocarbon, commonly used as a solvent to clean grease from metal parts. Concentrations of TCE in groundwater samples at the site have been as high as 85,000 parts per billion. The regulatory limit is 5 parts per billion.

The cleanup system uses granular activated carbon to remove contaminants from the water. Water is pumped from 10 extraction wells and temporarily stored in a 1,000-gallon tank. Water in the tank is pumped through a filter to remove dirt.

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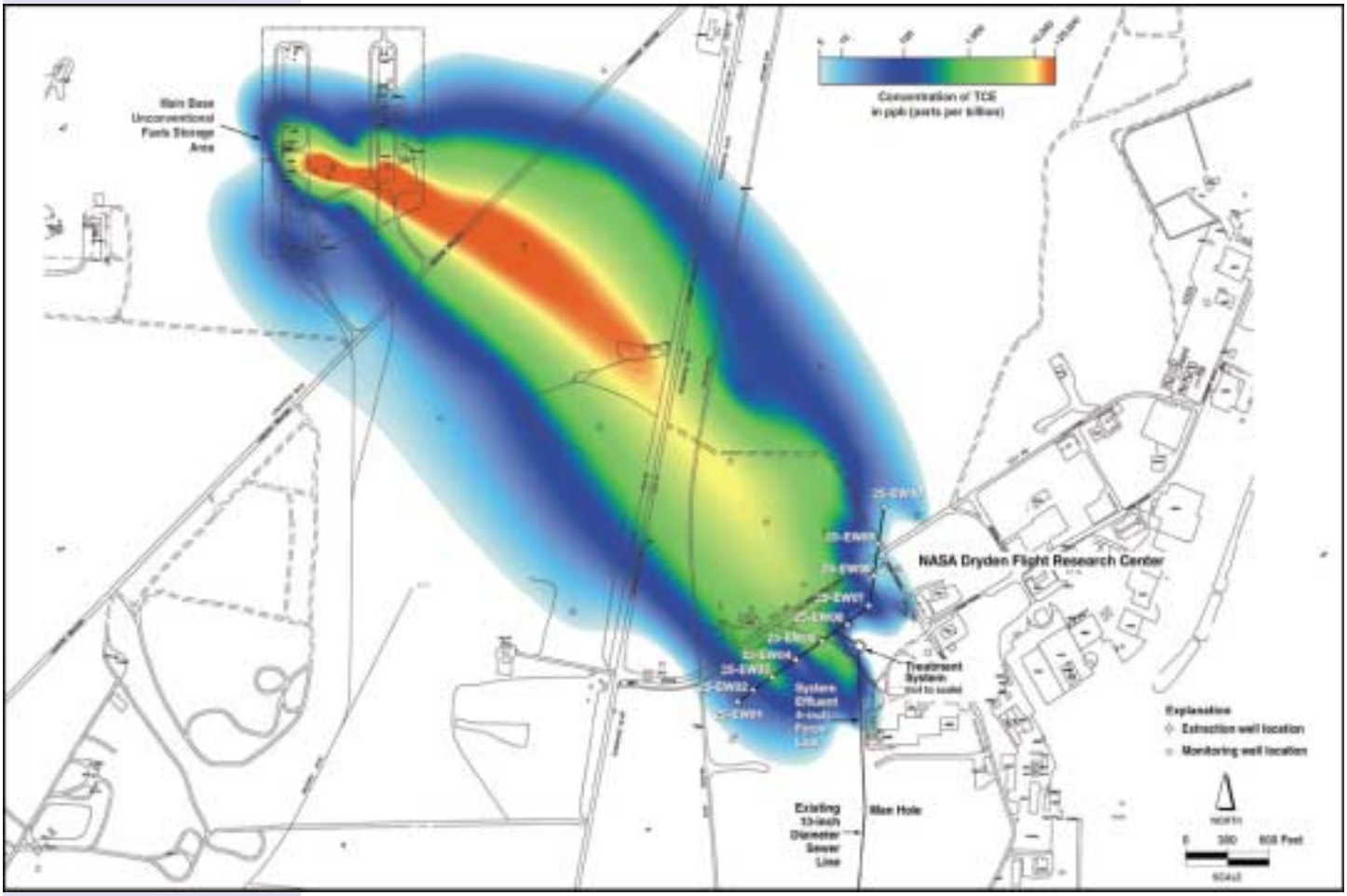
Then it is passed through two 2,000-pound canisters of liquid-phase granular activated carbon that removes the TCE and other contaminants. The treatment system will likely clean between 10 and 40 gallons per minute (gpm); however, the system is designed to treat a maximum of 100 gpm. The clean water is discharged into the sewer, where it may eventually be reused to irrigate landscaping.

"The technology works somewhat like a charcoal water filter in your home," Air Force project manager Stephen Watts said. The carbon usually consists of ground coconut shell charcoal that is thermally processed. This processing creates small porous particles with a large surface area. The carbon attracts and absorbs contaminants. Water can be passed through a canister full of the charcoal relatively quickly. Once a canister is fully saturated, the system is shut down and technicians replace the carbon. The sequence of the canisters is rotated so the newest carbon is always in the last canister. Saturated carbon is recycled off base at a licensed regeneration facility.

The system has several built-in safety features. The 1,000-gallon tank has sensors that trigger if the water rises above normal levels. If this occurs, the system shuts down the pumps and notifies Environmental Management (EM). This system can also detect other problems with the equipment, shut it down, and call EM. Water samples from the influent, effluent and midpoints between the granular activated carbon vessels are collected monthly. All samples are analyzed by a state-certified laboratory to ensure compliance with regulatory standards and to evaluate performance of the treatment system.



Site 25

For more information on this project or the Installation Restoration Program, contact Gary Hatch, chief, Environmental Public Affairs at (661) 277-1454 or e-mail:gary.hatch@edwards.af.mil.