ENVIRONMENTAL TREATMENT: Pump & Treat System

Shaw Air Force Base, S.C.

Pump-and-treat systems clean groundwater by pumping it from the ground, treating it and then discharging clean water.

HOW DOES IT WORK?

Made up of two parts, pump-and-treat systems include an extraction system and a treatment system. The extraction system pulls water from the ground using wells. After extraction, water is sent to the treatment system, where it is cleaned using a variety of methods such as air "stripping," carbon filtering and/or ultraviolet oxidation.

The pump-and-treat system used here has an air stripper to remove trichloroethylene and perchloroethylene from groundwater. After treatment in the air stripper, the water is neutralized to restore pH balance and then tested to ensure it is clean. The clean water is then discharged through a storm drain and piped into the Wateree River.

The Air Force discharges the clean water under permit and oversight of appropriate state and local regulatory agencies, such as the South Carolina Department of Health and Environmental Control.

HOW IS IT INSTALLED?

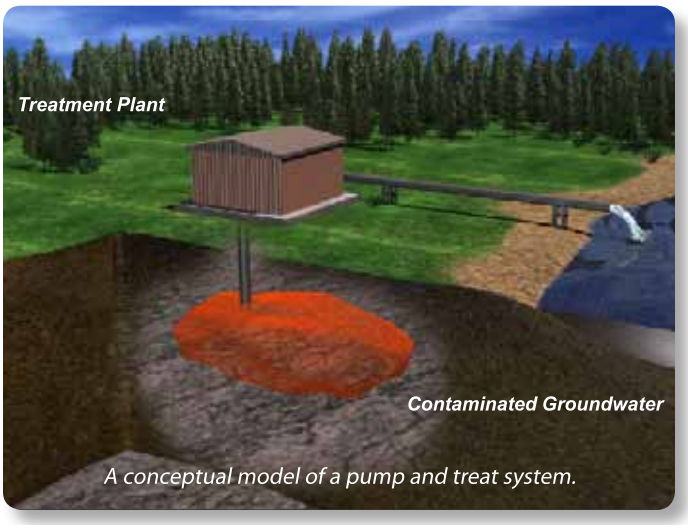
Pump-and-treat systems are designed and built specifically for the landscape of the contaminated area and the chemicals present in the groundwater. The geology of the area, including the soils and water sources, can affect the placement of wells and the construction of the water distribution system and treatment plants. Additionally, the specific chemicals in the groundwater will determine the most appropriate treatment system.

WHAT ARE THE BENEFITS?

Pump-and-treat systems are effective in areas where groundwater cannot be cleaned while it is still underground. They are a safe and well-established method of treating groundwater efficiently and effectively and are in use across the country. Pump-and-treat systems can also help prevent groundwater contamination from spreading to other areas.

WHERE IS PUMP AND TREAT TECHNOLOGY USED AT SHAW?

The Air Force is utilizing a pump-and-treat system as part of its remediation efforts to remove trichloroethylene and perchloroethylene from the Upper Black Creek Aquifer at site OT-16B at Shaw. Since the system was installed in 1998, the pump-and-treat system at Shaw has processed the equivalent of water that would fill 2,100 Olympic-size swimming pools. From that water, over 2,300 pounds of contamination have been removed.



A pump and treat system pumps contaminated groundwater out of the ground through a system of extraction wells. By placing wells on the boundary of the plume, the system also provides hydraulic containment of the plume so it does not spread. Extracted groundwater is run through an air stripper in the treatment plant to remove TCE and PCE. Treated water is pH balanced and tested to ensure it is clean before being discharged through a storm drain into the Wateree River.

Pump and treat system for site OT-16B, including air stripper, located on SC Rt. 441.

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U.S. Environmental Protection Agency: **www.epa.gov**
South Carolina Department of Health & Environmental Control: **www.scdhec.gov**