



Environmental Management & Planning

Client

United States Air Force

Location

Beale Air Force Base,
Sacramento, California, USA

"This project truly represents what cooperation between the Air Force, State, and Federal regulators can achieve. In addition to meeting all remedial action goals, this innovative project also met the objectives of conforming to the Riparian Conservation Area designation, protecting existing resources such as vernal pools, wetlands and special status species, enhancing habitat and of providing a net environmental benefit for the whole area".

Mike O'Brien Beale AFB remedial project manager

Basewide Monitoring and Innovative Remedial Systems

Project Description

Facing a twofold problem involving highly contaminated soil and groundwater in a sensitive habitat area, the Environmental Restoration Team at Beale Air Force Base designed a habitat enhancing solution to stop contamination from degrading groundwater and a stream in the area.

In 1995, the U.S. Air Force discovered trichlorethylene (TCE)-contaminated groundwater seeping into Best Slough, a perennial stream located on Beale Air Force Base north of Sacramento, California.

To control the TCE-contaminated groundwater from flowing into Best Slough, a 2,000-foot-long slurry wall—creating a physical barrier— was installed around the source zone of the contamination. Next, 1,600 feet of new stream channel was created to route Best Slough to flow around the contamination. This action, combined with a high density planting of native plant species inside the contaminated groundwater source zone, works to stop contaminated groundwater from ending up in Best Slough. Instead of using standard technologies, such as excavating the soil and pumping the groundwater, or using electrically-powered pumps to control the movement of groundwater, this green solution saved more than \$12 million in up-front costs. Another factor contributing to added cost savings in the millions of dollars is the low long-term life cycle cost for operation and maintenance.

Using this design, more than 5,000 plants (primarily native cottonwood and oak trees and native grasses) were planted inside the slurry wall within the five-acre contaminated source zone to help reduce the amount of water percolating into the contaminated areas.

To maximize the benefits to the ecosystem and habitat enhancement while providing erosion control, the Environmental Restoration Team partnered with state and federal regulators to create a planting scheme along the reconstructed streambank that included planting an additional 7,000 new plants. Their concept used more than 30,000 pounds of recycled coconut fiber matting along both sides of the new stream channel to provide erosion control and water-holding capacity, and to promote the growth of native grasses seeded beneath the matting.