Upgrade planned for 17-year-old cleanup system at North Base
Interim system removes nearly 200 pounds of perchlorate

C elebrating its seventeenth year of operation, an interim treatment system at Edwards Air Force Base, California, continues to clean up perchlo rate contamination in groundwater at a former site used to develop solid rocket fuel propellant. Located in the North Base area at Site 285, the groundwater extraction and treatment system, or GETS, has reportedly removed 187.2 pounds of perchlorate.

The Site 285 GETS uses an ion exchange technology that was introduced at Edwards in 2003. “We took a proactive approach back then to test an innovative bi-functional resin, and it turned out to be quite successful,” said Paul Schiff, former restoration program manager for the site and current Remedial Project Manager. The technology was developed by the Oak Ridge National Laboratory in Tennessee specifically to target perchlorate in the remediation of contaminated groundwater.

In the early 2000s, perchlorate was an emerging contaminant not yet regulated by established cleanup standards. Because of the proximity of Site 285 to the northern boundary of the base, concern was raised by the Edwards Restoration Advisory Board. As a result, the Air Force considered a treatability study at Site 285 in 2003 using the new selective resin technology. The technology was to be monitored over the course of one to two years to determine whether the system proved to be an effective method for remediation. Treatability studies provide opportunities to assess costs and evaluate performance over time. The goal is to learn what works during a treatability study and adjust treatment so that the site may move forward into a Superfund process.

Site 285 GETS functions by pumping groundwater from the contaminated area through filters that remove unnecessary material, such as sediment. The groundwater then flows through two ion exchange resin vessels where the resin beads will selectively draw out any perchlorate in the extracted groundwater. Next, the groundwater passes through a granular activated carbon filter that traps any remaining organic compounds. Finally, the treated groundwater is recirculated back into the groundwater injection wells. In a single year, the treatment system will have extracted, treated, and re-injected up to 2.2 million gallons of water.

Environmental restoration personnel track and monitor perchlorate concentration levels, to include “sampling sentinel wells to ensure that groundwater concentrations at the base boundary are below residential screening levels for perchlorate,” said Claudia Basura, current restoration program manager for the site. Since 2003, the system has reduced perchlorate concentrations from a high of 160,000 parts per billion — or ppb — to a high of 13,000 ppb. The decrease in concentrations has significantly reduced the size of the perchlorate groundwater plume at Site 285.

"With the success of the Site 285 GETS, the Edwards Environmental Restoration Program team is looking forward to completing the Feasibility Study, Proposed Plan and Record of Decision to either optimize this treatment method or select another remedial alternative that continues to be protective of human health and the environment,” said Basura.

Since 2001, various treatability studies have been implemented at Site 285, such as a soil flushing study and an enhanced in situ remediation study. Results from the soil flushing study proved the technology to be very effective. It was estimated that during a 20-week period, between 2005 and 2006, the treatment successfully removed 90 pounds of perchlorate at a test area near Building 4283. Soil flushing operates by using an underground sprinkler system to inject clean water at the top of a column where perchlorate sits in contaminated soil at a depth where excavation is impractical. Because perchlorate is a solid that dissolves like table salt in water, the injected water causes the perchlorate to dissolve out of the soil and into the groundwater. The Site 285 GETS then extracts the perchlorate contaminated groundwater for treatment.

"Because perchlorate does not behave the same way that solvents do, we felt it was slightly easier to treat and clean up the site,” said Schiff. “We have been remediating this site for the past 17 years without a formal selected remedy, and it has been an effective approach thus far.”

With the Site 285 GETS in its seventeenth year of operation, the Air Force is taking steps to ensure the system continues to run until a remedy is officially selected. Thanks to a new operations and maintenance contract awarded in late September, the system is expected to undergo a treatment optimization that will involve modernizing some of the system’s components. “Renewing the system will improve the overall function by increasing its productivity while generating reliability for years to come,” said Basura.
The Restoration Advisory Board (RAB) is made up of appointed representatives from communities on and around Edwards Air Force Base, regulators from federal and state agencies and base officials. The board’s purpose is to provide a forum for two-way communication between the public and those responsible for environmental cleanup at the base.

The board meets semiannually, rotating meeting locations among communities surrounding the base. The public is welcome to attend. Those who have questions or concerns about cleanup activities at Edwards may contact any RAB member or Gary Hatch, 412th Test Wing Public Affairs, at (661) 277-8707.

The RAB also has its own Facebook site: www.facebook.com/RAB.Edwards. “Like” us on Facebook today!

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General information about the environmental program at Edwards can be found at the following websites:

www.edwards.af.mil/About/Environment
www.facebook.com/EdwardsEnvMgt