



November 2012

Report to STAKEHOLDERS

Volume 17 No. 6

Update on South Base cleanup

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First five-year review released

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Restoration program works on cleaning up historic contamination at South Base

Chuck Yeager's pit, where the X-1 was loaded into its B-29 mothership, is still there. Except for the desert bushes growing through the cracks in the concrete or dirt floors, rammed earth adobe revetments built to hide World War II bombers from the enemy still look like they did at war's end. And just like the concrete pit and the adobe walls, fuel and solvents from the early years of aircraft maintenance 60 years ago are still under the ground.

In June 2009, the South Base Record of Decision was signed, and the important work of designing and building remedies to clean up soil and groundwater contamination left over from the glory years of flight test began. Three years later, it's time for an update on activities in this most historic location of the restoration program.

Sites 5/14

Sites 5/14 is a mixed plume of jet fuel and trichloroethene (TCE) that stretches for over a mile from the western end of the Birk Flight Test Facility toward the lakebed. Historically, underground storage tanks were used to store oil, fuel and hazardous waste. The tanks leaked. Cleanup at Sites 5/14 is complicated because there is a puddle of fuel floating on the surface of the groundwater in the middle of the plume. Until that floating fuel is removed, it will continue to be a source for contamination in the soil and groundwater. The sites currently have three remedies in place.

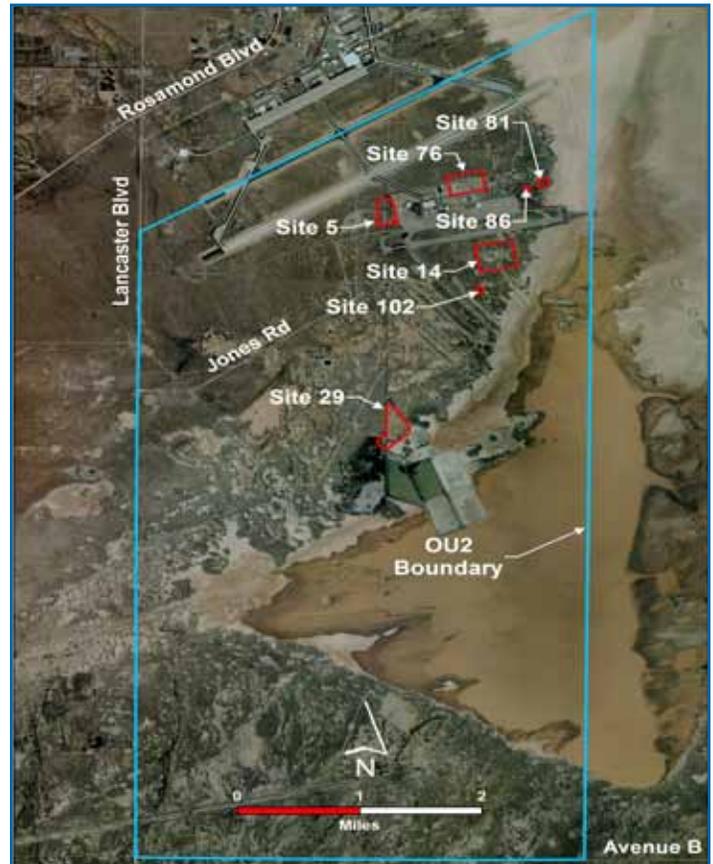
The first phase of the final remedy for the site uses *in-situ* biodegradation to remove the floating fuel from the middle of the plume. *In-situ* biodegradation relies on bacteria in the soil and groundwater to break down the contaminants under the ground. Project manager Rebecca Hobbs explained that nutrients are injected through wells to feed naturally occurring microorganisms in the groundwater that destroy the contamination.

Upgradient of the floating product, closer to the Birk Flight Test Facility, the Air Force is using a technology called *in-situ* chemical oxidation. This involves injecting potassium permanganate into the contaminated groundwater using horizontal wells. "Through a chemical process it destroys the TCE," Hobbs said.

Until the floating product in the middle of the plume is gone, other measures to clean up the soil and groundwater downgradient are delayed. However, at the leading edge of the plume, the Air Force has a groundwater treatment system to contain the plume. "We're capturing the plume so it doesn't migrate any further," said Hobbs. "We're estimating it will take 12 years to clean the whole plume."

Site 76

Site 76 is located northeast of the Birk Flight Test Facility. It includes the former locations of the Muroc Army Airfield motor pool, engineering shop, a gas station, and a paint building. Chemicals were probably disposed of on the ground surface nearby. The groundwater contaminant here is TCE. "The remedy to clean the TCE is *in-situ* chemical oxidation," Hobbs said. The Air Force expects it to take 4 to 6 years from now to destroy the contamination.



SITE MAP — The South Base restoration sites are spread throughout the cleanup area known as Operable Unit 2 (OU2).

Site 86

Site 86 is located southeast of the Birk Flight Test Facility, near one of the adobe revetments. It was the location of an engine test cell. Fuels, solvents, waste oils and lubricants were used and disposed of at this location. Cooling water contaminated with TCE was flushed through engines and discharged into the nearby soil through concrete drainage channels. Hobbs estimates it will take less than 5 years to destroy the TCE at Site 86 using *in-situ* biodegradation.

Sites 81/102

Sites 81/102 are World War II-era skeet target ranges. The area is contaminated with lead shot and skeet shards that contain polycyclic aromatic hydrocarbons. "We know the contamination is at least 6 inches deep and fairly widespread," Hobbs said. At the time the Record of Decision was published, plans for this area were not included. After further studies, the Air Force is preparing an engineering evaluation/cost analysis (EE/CA) to look at different alternatives. The alternatives include complete excavation or a partial excavation to keep from destroying habitat. They are also considering separating out the lead to recycle it. The remaining skeet shards will be treated as hazardous waste. Hobbs anticipates having a draft EE/CA for the regulatory agencies to review in December 2012.

Site 29

Site 29 is the reason the base was included on the U.S. Environmental Protection Agency's National Priorities List, or Superfund list in 1990. The site is a combination of a 4-acre civilian landfill from the 1930s and a 34-acre landfill used from the 1950s to the 1970s by the Air Force. Regulators had concerns that there might be hazardous waste in the landfills that could contaminate the base water supply.

After a preliminary project recycled almost 150,000 tons of building debris on the ground surface, the Air Force had planned to put a soil cap on the landfill and monitor the area at a cost of \$18 million. However, removing the surface debris revealed the remaining buried waste in the landfill was only 21,700 cubic yards, not nearly as large as previously thought. The new plan calls for complete removal of the buried waste with a savings of \$8.6 million. This clean closure means the land will be opened up for unrestricted future use.

Hobbs said the new Record of Decision for Site 29 will be finalized and signed in 2012.

Five years later, remedies in southern area of rocket lab remain protective

Edwards Air Force Base officials released their first five-year review report in September, evaluating the restoration measures in place at South Air Force Research Laboratory (AFRL). Data in the report confirm that the existing cleanup remedies, as selected in the area's 2007 Record of Decision, are functioning as intended and remain protective of human health and the environment. The U.S. Environmental Protection Agency and California EPA concur with the Air Force's findings.

The five-year review uncovered the need to update the cleanup level for perchlorate in groundwater to the state drinking water level; and to update cleanup levels for tetrachloroethene (PCE) and trichloroethene (TCE) to reflect new toxicity data for these solvents. These updates do not affect the protectiveness or functionality of the remedies in place at South AFRL — specifically at Sites 37, 120, 133 and 321. The remedies evaluated in the report address the groundwater and subsurface vapor intruding into indoor air at these sites.

South AFRL is located on the southwestern side of Leuhman Ridge, east of Rogers Dry Lake, in the western section of the Mojave Desert. The main contaminants of concern are PCE and TCE, two solvents historically used to clean engine and metal parts in support of rocket propulsion activities conducted at AFRL.

The groundwater remedy in place includes a technical impracticability waiver and containment zone, land use controls and long-term monitoring. The geology at South AFRL is fractured granitic bedrock, and remediation of groundwater contaminants within the bedrock has proven to be technically infeasible. The Air Force restricts the use of the land to protect human health and monitors the groundwater plumes to ensure they remain within the containment zone.

The vapor remedy for South AFRL includes engineering and land use controls, and sampling and monitoring activities. This remedy addresses chemical vapors which could potentially enter buildings located above plumes of contaminated groundwater.

South AFRL remedies will continue to be evaluated every five years until the sites are cleaned to unrestricted use. The area's next five-year review is expected to occur in late 2017. The current South AFRL Five-Year Review Report is available online at <https://eafb.mojavedata.gov/SitePages/Home.aspx> (in the "Restoration Reports" folder), and at the information repositories listed on the back of this newsletter.

For more information or to have a copy of the South AFRL Five-Year Review Report sent to you, contact Gary Hatch, 412th Test Wing Environmental Public Affairs at (661) 277-8707 or e-mail 412tw.pae@edwards.af.mil.

Report to STAKEHOLDERS

Report to Stakeholders is a publication of Edwards Air Force Base, 412th Test Wing, Civil Engineer Division, Environmental Management. Its purpose is to inform and educate the public, base workers and residents about continuing environmental and safety efforts on base. It currently has a circulation of 6,000, including about 2,000 subscribers.

Contents of the *Report to Stakeholders* are not necessarily the official view of, or endorsed by, the U.S. government, the Department of Defense or the Department of the Air Force.

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Any comments or questions about the contents of the *Report to Stakeholders* may be directed to: Gary Hatch, 412 TW/PA, 305 E. Popson Ave., Edwards AFB, CA 93524, (661) 277-8707.

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WHAT'S ON THE COVER?



The Bell X-1 (center) prepares to be loaded into the B-29 mothership (back) in June 1947. A few months after this photo was taken, the X-1 flew faster than the speed of sound for the first time. Chuck Yeager was piloting the aircraft at the time.

Where to find more INFORMATION



Published data and documents relating to Environmental Management are available for public review at three information repositories. They are updated when new documents are released. Here is a list of our current information repositories:

Edwards Air Force Base Library

5 W. Yeager Blvd.
Edwards AFB, Calif.
(661) 275-2665
Hours of operation: Mon-Thu 9:30 a.m. – 7 p.m.
Fri 9:30 a.m. – 6 p.m.
Sat-Sun 10:30 a.m. – 6 p.m.

Kern County Public Library

Wanda Kirk Branch

3611 Rosamond Blvd.
Rosamond, Calif.
(661) 256-3236
Hours of operation: Wed 11 a.m. – 7 p.m.
Fri-Sat 9 a.m. – 5 p.m.

Los Angeles County Public Library

601 W. Lancaster Blvd.
Lancaster, Calif.
(661) 948-5029
Hours of operation: Mon-Wed 10 a.m. – 8 p.m.
Thu-Fri 10 a.m. – 5 p.m.
Sat 11 a.m. – 5 p.m.

For questions about information in the repositories, you may contact Gary Hatch, Public Affairs chief of Current Operations, at (661) 277-4127 or by e-mail at 412tw.pae@edwards.af.mil.

For general information about Edwards or other documents of public interest, you may visit the following link:
www.edwards.af.mil/library/environment.

Restoration Advisory Board (RAB) Information

The RAB is made up of appointed representatives from communities in 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 in 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, Public Affairs chief of Current Operations, at (661) 277-8707. The RAB also has its own Facebook site: www.facebook.com/RAB.Edwards. "Like" us on Facebook today!

NEXT BOARD MEETING

Date: November 15
Time: 5:30 p.m.
Location: Boron

RAB Members

OFF-BASE COMMUNITIES

Boron

Vacant — If you live or work in Boron, you can apply to be a public representative.

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ON-BASE COMMUNITIES

Housing

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Main Base Test Wing

Vacant — If you work for the 412th Test Wing, you can apply to be a public representative.

NASA Dryden

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North Base

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South Base

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Lahontan Regional Water Quality Control

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