



# Guardian

America's ~~First~~ Choice for Environmental Restoration

A Publication of the Environmental Restoration Program

Travis Air Force Base, California

July 2010

*Award-Winning*

## INSIDE

### Viewpoint:

Two members of the Travis AFB Environmental Restoration Program were offered an opportunity of a career: to present a key note address on Green and Sustainable Remediation to a distinguished group of Air Force, contractor, and regulatory representatives. They describe their personal experiences in showcasing Travis' success with this new cleanup strategy in a dual Viewpoint ..2

### Photographs from the Field:

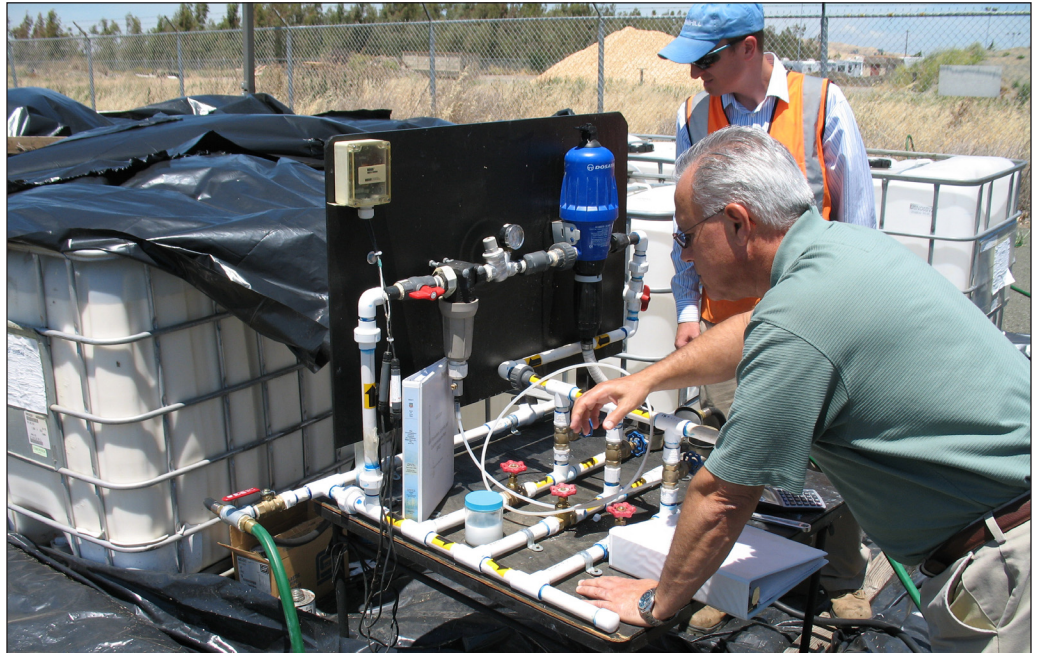
A lot of field work is taking place at Travis AFB this summer, and these photographs show various aspects of one of the more interesting projects: the injection of emulsified vegetable oil to treat contaminated groundwater.....5

### Next RAB Meeting:

The next Restoration Advisory Board meeting will be held on October 21, 2010 at 7 p.m. at the Office of the Northern Solano County Assn. of Realtors. The meeting agenda is forthcoming.....6

## Acronyms

**AFCEE:** The Air Force Center for Engineering and the Environment provides Air Force leaders with the expertise and professional services needed to protect, preserve, restore, develop and sustain the nation's environmental and installation resources.



(Photo by Glenn Anderson)

**Oil That's Good for the Environment:** An Army Corps of Engineers representative inspects a valve assembly for pumping vegetable oil into injection wells across a solvent plume. Microbes eat the oil, which promotes the breakdown of solvent contaminants into harmless compounds.

## Overseeing Optimization

### Best Management Practices Improve Remedy Performance

By Mark Smith

Travis Environmental Program Manager

In July of 2008, the Air Force Center for Engineering and the Environment (AFCEE) sent a team of environmental and engineering subject matter experts to Travis AFB to look for ways to improve the effectiveness and efficiency of four groundwater treatment systems. These systems were installed to support a number of interim groundwater cleanup actions, some of which have been in operation for almost 13 years.

Back in 1997, the standard method for

cleaning up contaminated groundwater was a highly engineered groundwater extraction and treatment (GET) approach, which was presumed to work under most site conditions. It is often referred to as pump and treat, and its goals were to remove large amounts of contaminants and prevent them from moving any further. This method was also widely accepted by the three regulatory agencies that oversee the Travis AFB restoration program: the U.S. Environmental Protection Agency, the San Francisco Bay Regional Water Quality Control Board, and the California Department of Toxic Substance Control.

Between 1998 and 2000, the base built

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Visit our Environmental Restoration Program web site at <http://www.travis.af.mil/enviro>



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# Strutting Our Green Stuff

Normally, this is where I provide a viewpoint on how the Travis AFB environmental restoration program is progressing, but this time I am giving this task to my two project managers: Lonnie Duke and Glenn Anderson.

The reason for this is that they gave a tag-team keynote speech to the attendees of the 2010 Air Force Restoration and Technology Transfer Workshop in San Antonio, Texas last April. And they won't stop talking about it!

For federal employees at the installation level, this is quite an honor. It



## VIEWPOINT

Mark H. Smith  
Travis AFB Remedial  
Program Manager

is comparable to giving a promotional speech on day one of a political convention (or throwing out the first pitch at a baseball game). It sets the tone for the rest of the event.

So, these are their viewpoints of their experiences behind the podium:



(Photo by AFCEE Public Affairs)

### By Lonnie Duke

Travis Environmental Project Manager

Starting in the late 1990's, the Travis AFB Environmental Restoration Program has applied Green and Sustainable Remediation (GSR) principles to groundwater cleanup. In 2008, the Environmental Protection Agency published its policy document on Green Remediation, which explained that GSR strategies can reduce electricity consumption and Green House Gases generation, and still comply with all legal requirements and get the cleanup done more efficiently. As

we have written in previous *Guardian* articles, we have been fairly successful at this GSR stuff.

As a result of that success, the Air Force Center for Engineering and the Environment (AFCEE) asked Glenn Anderson and I to give a twenty-five minute case study presentation on Travis AFB GSR implementation at the 2010 Air Force Restoration and Technology Transfer Workshop in San Antonio last April. It was an honor that reflected positively on the base and the whole restoration team.



# Viewpoint

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However, when we learned that our presentation would not be in a small classroom but rather in a huge lecture hall with everyone in attendance, scheduled after the high level keynote speakers, I just felt nervous. We knew the key points that we wanted to make, but the pressure was on to showcase our restoration program and not come off looking like rookie presenters, since neither one of us had spoken in front of such a large audience before.

I have sung karaoke in front of large crowds, but this type of public speaking was a whole different challenge. On the day of the presentation, I wasn't paralyzed with fear, but my adrenaline was pumping! When our time came to walk onto the stage and face the crowd, I thought about my past presentations to the members of the Travis AFB Restoration Advisory Board (RAB) over the years and decided that today's speech would go real smooth if I thought of it as just another RAB meeting. So, I declared that all workshop participants were now honorary members of the Travis AFB RAB and started into my presentation.

Since we were the only subject matter experts on GSR implementation to talk that morning, the presentation became a practical application clinic.

I started with a definition of the GSR concept, described the advantages of GSR over older remediation technologies, and gave Travis-specific examples of successful application of green technologies. A picture is worth a thousand words, and my slides were filled with photographs of real-world GSR success stories. From solar powered groundwater extraction wells to treatment plant retrofits, Travis AFB offers many GSR examples that can be applied to other facilities.

My presence behind the podium also gave me a terrific platform from which to advocate a pro-GSR agenda. President Theodore Roosevelt referred to this position of authority as the "bully pulpit," and from this position I promoted the following key points:

-- There are times when GSR offers the only realistic way to successfully carry out a cleanup. My example was a set of solar-powered extraction wells in the middle of a protected wetland in the northern part of the base. Digging a utility trench through the wetland to run an electrical line to the pumps was out of the question, so our solar-powered solution was both practical and cost effective.

-- We do not view GSR as just a new clever way of doing business. It is part of a natural transition from a heavily engineered treatment system that removes large quantities of contamination at the start of a cleanup

to a smaller, less engineered treatment strategy that finishes a cleanup. So, almost every contaminated site can benefit at some point from GSR.

-- Currently, we cannot use our cleanup dollars to beneficially use treated water (for landscape irrigation or for dust suppression at a construction site, for example). I questioned that and suggested that treated water is a valuable resource that is worth the investment.

-- GSR represents both common sense and the best management practices available.

When my part was over, and Glenn walked toward the podium to continue the Travis AFB presentation, I looked around the room. We had the audience's attention, including that of previous keynote speakers. We were doing Travis proud!

Epilogue: Since that challenging but rewarding morning in San Antonio, I have attended two environmental conferences, and on both occasions people have introduced themselves to me and offered positive feedback on how well the Travis AFB case study was received. Also, AFCEE officials are using excerpts from our presentation to promote GSR implementation in the Air Force. How does that saying go? Imitation is the sincerest form of flattery?

I felt very flattered that day!




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**By Glenn Anderson**

Travis Environmental Project Manager

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It would be an understatement to say that a keynote address at the 2010 Air Force Restoration and Technology Transfer Workshop was a big deal. It was a huge deal, one that does not come our way very often.

Normally at an Air Force workshop, I sit in the audience, listen to the speakers and take lots of notes to use back in the office. On that day in early

April, Lonnie Duke and I faced that audience, and they were taking notes on us!

About half of the people in the auditorium were Air Force representatives, another forty percent were environmental contractors, and the remaining ten percent were from the regulatory community. They consisted of program managers, project managers, attorneys, chemists, biologists, risk assessors, researchers, federal

and state regulators, and community relations specialists from all over the country. Most of these people are directly involved in meeting the Air Force 2012 cleanup goal. It was an impressive group.

Even more impressive were the other keynote speakers, who were environmental movers and shakers within the Air Force and Department of Defense. Listed in order of ap-

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pearance, they were the Director of the Air Force Center for Engineering and the Environment (AFCEE); the Deputy Chief of the Technical Support Division at AFCEE; the Chief of the Environmental Restoration Division at AFCEE; the Chief of the Restoration Branch Technical Division at AFCEE; the Chief of the Environmental Branch in the Asset Management and Operations Division at Headquarters Air Force in Washington DC; the Program Manager for the Defense Environmental Restoration Program in the Office of the Deputy Under Secretary of Defense for Installations and the Environment; the Acting Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health; and the Deputy Director of the Air Force Real Property Agency. They were all VIPs, and we followed them.

Lonnie started the Travis AFB case study with real world examples of green and sustainable technologies that Travis AFB is either actively using or testing out to clean up contaminated

groundwater. This got everyone's attention. My job was to describe tools and strategies that they can use to promote green and sustainable remediation at their facilities.

It would be difficult to describe in detail all of the recommendations that I gave that morning, but most can be summarized in one sentence:

Environmental program managers can successfully apply GSR concepts to their restoration programs by working diligently with their regulators, selecting the environmental contractors with the best GSR concepts and implementation plans, taking advantage of all opportunities that AFCEE offers to

involvement program.

Our presentation ended with a summary of our key points, and Lonnie and I received the standard amount of applause from the audience as we were leaving the stage. At that point, an AFCEE representative walked briskly to the microphone and gave the audience a glowing account of Travis' impact on the Air Force's efforts to promote sustainability into its restoration program. That led to handshakes with a few of the other keynote speakers and a second round of applause. For Lonnie and me, it was completely unexpected and absolutely gratifying.

It was also humbling, because we were there to receive the applause and the kind words, but we were only a part of the Travis Team that has worked for years to make this environmental restoration program what it is today. It was a privilege (albeit, a scary one) to stand in front of our Air Force colleagues and represent our base and our team of environmental professionals.

This year's AFCEE restoration workshop offered other highlights, but this one was the highest.

(Photo by AFCEE Public Affairs)



demonstrate that green technologies work under real-world conditions, and advertising their ideas and success stories through a vibrant community

## Oversight

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the four GET systems, and since that time, they have treated over a billion gallons of water and removed over 12,000 pounds of contaminants. A lot of progress has been made, but there is still a lot to do. The treatment systems have been operated and maintained to ensure that they perform as designed,

but the amount of system maintenance increases with age, so decisions on the future of these systems need to be made. Contamination no longer shows up at many groundwater monitoring wells, so a new phase of groundwater monitoring has started to verify that the cleanup around those wells is complete. And final groundwater cleanup remedies need to be selected

with regulatory approval to replace the interim remedies.

This is where the AFCEE team of subject matter experts entered the picture. Referred to as the Remedial Process Optimization (RPO) team, they inspected our interim groundwater cleanup efforts, looked at the



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performance data from the four GET systems, and made recommendations to improve treatment effectiveness and system efficiencies.

Their recommendations focused on the shutdown of technologies that consumed large amounts of energy and in some cases a transition to green and sustainable technologies, such as solar-powered extraction pumps. Of

eleven RPO recommendations, Travis AFB has carried out eight of them, resulting in considerable savings to the government and improvements in overall cleanup efficiency.

Optimization does not end with a site visit and a lengthy “To Do” list. The RPO site visit was set up by AFCEE’s Environmental Restoration Program (ERP) Management Office in San Antonio, and they want to make sure that they are getting a good return on their investment. So, they called

upon several Travis restoration staff members to attend a management review meeting in San Antonio and discuss our progress in acting on the remaining optimization recommendations. Such a move puts some teeth behind the RPO team’s recommendations, because it ties them directly to the management and funding of the Air Force ERP.

Since optimization is really just

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## Photographs From the Field

A lot of environmental field work is taking place on Travis AFB, but the most interesting project is the

subsurface treatment of contaminated groundwater through the injection of emulsified vegetable oil (EVO).

Future Guardian articles will describe this treatment strategy in more detail and report on the results of the EVO injections at multiple groundwater sites.



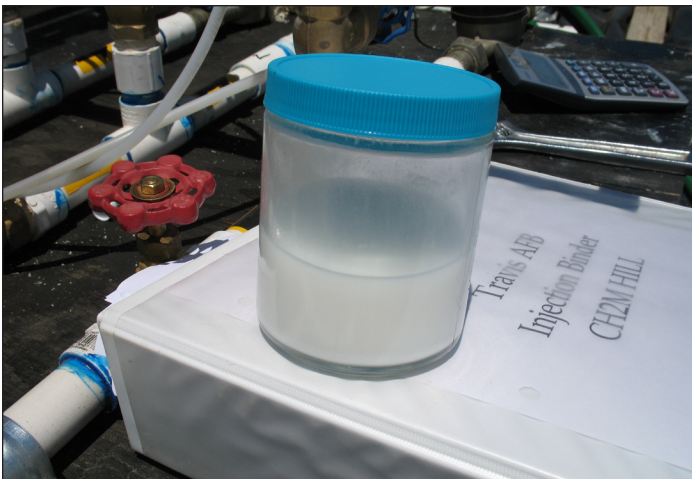
(Photo by Mark Smith)

A heavy equipment operator places several 270-gallon totes of emulsified vegetable oil (EVO) onto a spill containment pad. Although the oil is nonhazardous, these precautions are taken to simplify a cleanup in case a tote ruptures.



(Photo by Glenn Anderson)

The EVO is pumped into an area with solvent-contaminated groundwater via a series of injection wells. The pressure gauge indicates the amount of pressure needed to properly distribute the oil beneath the water table.



(Photo by Glenn Anderson)

EVO looks like glue. An emulsion is a suspension of one liquid (oil) in a second liquid (water) with which the first one will not mix, such as milk fat in milk. The emulsion makes it easier to evenly distribute the oil throughout the subsurface.



(Photo by Glenn Anderson)

A field manager explains the operation of the EVO distribution valve assembly to representatives of the U.S. Army Corps of Engineers, Omaha District and the California Department of Toxic Substances Control.

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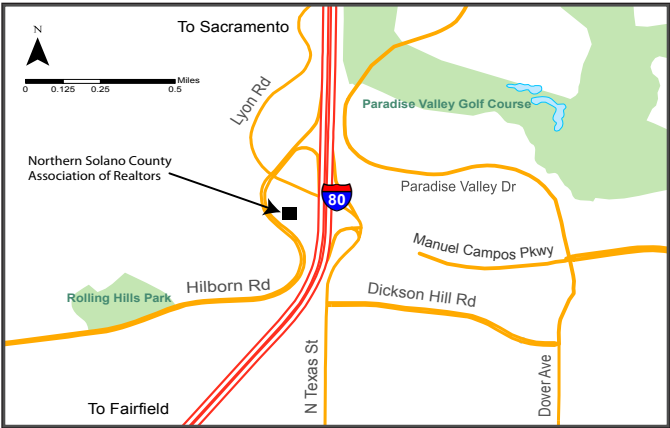
an application of best management practices, the base ends up with a blueprint for successful cleanup and a means to turn the blueprint into reality. It promotes remedy selection, regulatory coordination, and eventually site cleanup and closure.

The phrase “It’s time to trade in the old SUV for a new Prius” is used around the Travis AFB restoration office to capture the essence of optimization. By the end of 2012, all Travis groundwater cleanup remedies should be technically efficient, cost effective, and environmentally attractive; all thanks to an optimization site visit two years ago and program oversight today.

Travis AFB  
Restoration  
Advisory  
Board  
Meeting

October 21, 2010  
7 p.m.

Northern Solano County  
Association of Realtors  
3690 Hilborn Road  
Fairfield, CA



LOCATION OF INFORMATION REPOSITORIES

<b>Vacaville Public Library</b> 1020 Ulatis Drive Vacaville, CA 95688  (707) 449-6290  <b>Monday-Thursday:</b> 10 a.m. - 9 p.m. <b>Friday-Saturday:</b> 10 a.m. - 5 p.m. <b>Sunday:</b> 1 p.m. - 5 p.m.	<b>Fairfield-Suisun Com. Library</b> 1150 Kentucky Street Fairfield, CA 94533  (707) 421-6500  <b>Monday-Thursday:</b> 10 a.m. - 9 p.m. <b>Friday-Saturday:</b> 10 a.m. - 5 p.m. <b>Sunday:</b> 1 p.m. - 5 p.m.	<b>Mitchell Memorial Library</b> 510 Travis Boulevard Travis AFB, CA 94535  (707) 424-3279  <b>Monday-Thursday:</b> 10 a.m. - 9 p.m. <b>Friday:</b> Closed <b>Saturday:</b> 12 p.m. - 6 p.m. <b>Sunday:</b> 12 p.m. - 6 p.m.
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If you would like more information or need special accommodations for the RAB meeting, please contact Mark Smith, (707) 424-3062. You can also view our web site at <http://www.travis.af.mil/enviro>

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