



Guardian

America's First Choice for Environmental Restoration

A Publication of the Environmental Restoration Program

Travis Air Force Base, California

January 2014

INSIDE

Viewpoint:

*It is not easy to watch television or read the newspaper without hearing or reading about New Year's resolutions (there is even an app to help you keep them). The New Year represents a fresh start, and Mr. Mark Smith, Travis AFB Environmental Program Manager shares with us his list of professional resolutions for 2014.....***2**

Next RAB Meeting:

*The next Restoration Advisory Board meeting will be held on April 17, 2014 at 7 p.m. at the Office of the Northern Solano County Association of Realtors. The meeting agenda is forthcoming.....***4**

Acronyms

Geographic Information System (GIS):

A geographic information system uses technology to store, analyze, manage and present all types of geographical data. GIS is often used in engineering, business and other activities to visualize numerical data.

Green and Sustainable Remediation (GSR):

Green Remediation tries to reduce the demand placed on the environment during cleanup and to conserve natural resources. Sustainable Remediation relies on renewable energy sources to power field operations more efficiently.



(Photo by Lonnie Duke)

Casting a Larger Shadow: A field team completes the placement of a large solar panel array near the northern base fence. The array will supply more electrical power to a groundwater extraction well that is placed near the center of a solvent plume, which should speed up its cleanup.

The Supersize Solution

Larger Solar Panel Array Increases Pumping Capacity

By Lonnie Duke

Travis Environmental Project Manager

In the October 2004 Guardian, and later in the January 2009 Guardian, we reported on the use of solar power to clean up contaminated groundwater beneath Travis AFB. Pumps require electricity to extract contaminated groundwater from the subsurface and transfer it to a treatment facility. By hooking pumps to a solar array, the treatment reduced electrical demand on the base electrical grid, reduced the length of utility lines needed to support groundwater cleanup, and complied with the country's energy policy.

Travis AFB first applied solar power to two extraction wells at Site LF007C almost 10

years ago, and the initial results seemed promising. However, it became apparent that the pumps in those two wells were undersized, and the limited amount of electricity generated by the small solar panels allowed the wells to produce only a half gallon of solvent-contaminated groundwater each minute.

Site LF007C consists of a solvent plume that extends about 200 feet off-base, and groundwater flow in this area is controlled by a complicated bedrock that makes it more difficult to pull the plume back onto the base and treat it. When this information was reviewed during the Third Travis AFB Five-Year Review (described in the October 2013 Guardian), the conclusion was that the current system was not getting the job done. Even

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



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Our New Year's Resolutions

It is 2014, and many of us rang in the New Year by watching the ball drop on television, cheering a favorite team during one of 35 college bowl games, and finishing up their visits to family and friends. And let us not forget about a favorite annual tradition: New Year's resolutions.

From losing weight to making better financial decisions, resolutions in January represent fresh starts and opportunities to channel our new-found motivation toward the betterment of ourselves and those around us. Of course, we could start a resolution at any time during the year, but there is something about saying goodbye to the previous 12 months and embracing the immediate future that seems to work for many of us. At least it is worth a shot.

Most Viewpoint readers are already familiar with all of the change that has taken place with the Travis AFB Environmental Restoration program and staff. We are assigned to a new organization, working in a new building, and taking on new responsibilities. There is no way that we could have guessed at the start of 2013 the amount of change that we would experience in the following 12 months. However, in spite all of the newness that we feel today, we still looked at the New Year as a time to take a second look at ourselves and commit to several resolutions for 2014.

So, what resolutions did we come up with? Here is the short list. We'll strive to:

1. Organize and streamline our records. At one time, the restoration staff consisted of 10 scientists, engineers, and project managers; and each person maintained his/her own project files and documents. Now that there are only three of us remaining in the program, our move to a new building gave us the chance to consolidate records and recycle duplicate working or reference documents. This is a project in progress but an objective worth the effort. It is like spring cleaning, without waiting for warm weather to spring into action.

2. Look for educational opportunities to improve our skill sets. Because of the increased workload that came with our first Performance-based Contract, we only attended training classes that



VIEWPOINT

Mark H. Smith

Travis AFB Restoration
Program Manager

directly supported short-term work goals and contract requirements. Starting in 2014, our responsibilities will change, and so our educational needs should change with them. Specifically, we see a lot of value in keeping current with Green and Sustainable Remediation (GSR) technologies, managing Geographic Information Systems (GIS) data in-house and staying in tune with software advances that help us work smarter rather than harder. The initial investment in ourselves to learn how to complete routine but complex tasks such as GIS will pay for itself over time when we don't have to rely upon contracted resources. We believe in doing what we can in-house and only farming out what we can't do ourselves.

3. And finally, promote a more positive and constructive office climate. I mentioned in previous Viewpoints how great it is to work with a group of professionals who are results-oriented and require minimal supervision. However, last year's budget cuts and furloughs added stress to the lives of most federal employees, and we will probably see more of the same in the future. The last thing we need is for negativity from outside stressors to creep into our daily lives and reduce our productivity, so my focus will be to instill a sense of creativity and optimism into our work environment. For example, a pizza or two may show up before the start of a staff meeting, and we could bring our laptops to the occasional meeting outdoors, particularly when the weather warms up.

Unlike many New Year's resolutions that last for about three weeks, this list is definitely achievable and important to our future success as a team. I also have a list of personal resolutions, but if history repeats itself, they'll be gone by the time you read this. If you made some resolutions this year, I wish you good luck in keeping them.



Array

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though the wells were placed in the right spots, they were not extracting enough groundwater to adequately meet their Remedial Action Objectives and thus protect human health.

To make the groundwater cleanup even more challenging, the presence of protected habitat (a vernal pool) above the contaminated groundwater requires the extraction system to be shut down when standing water from winter rain is present. Because groundwater cleanup can only take place during dry months, the system's effectiveness is restricted.

In spite of the poor showing by the extraction system, the Travis AFB restoration team still considered the overall concept for cleaning groundwater to be sound. Groundwater modeling used the information from the 2012 investigation to show that the extraction system could be optimized to prevent contaminated groundwater from moving further off-base and to pull it back to where it could be extracted and treated. It is as if we were trying to haul a large, heavy trailer with a small utility truck. Even if the truck was in great mechanical shape, it would be too underpowered to safely drive over a mountain pass. The answer was simple; we needed a bigger power source!

So, a new pump and solar array was installed last month, and the differences between the old and new systems are striking. The original solar array measured 4 feet by 2 feet in size and was rated at 90 Watts. It was connected to two 24 volt batteries that could produce about 100 amp-hours of power after sunset each day. The new solar array measures approxi-

mately 26 feet by 10 feet and is conservatively rated at 2600 Watts, although it could get as high as a 3600 Watt output with the right air temperature and angle toward the sun. The new 48 volt battery bank consists of 8 batteries that could produce about 405 amp-hours.

"The new solar array looks impressive and meets our size and performance requirements," stated Mr. Mark Smith, Travis AFB Restoration Program Manager. The panels were manufactured by Cana-

to be firmly embedded into the ground, since it could act as a large sail and become damaged when the Delta Breezes are blowing strong. Three large support posts keep the array steady during inclement weather. According to Mr. Doug Berwick, CH2M HILL project manager for this construction effort, "each 13-foot 6-inch steel support post is anchored in 2-foot borings down to 5.5 feet, using about 50 cubic feet of concrete. The foundation is a beast; I don't think those panels are going to go anywhere anytime soon!"

Another system improvement is the construction of a new treatment facility which consists of a 12 foot square concrete pad, a couple of granular activated carbon drums and associated piping. It replaced an existing treatment plant that needed an additional 5,000 linear feet of piping to operate. The greater the length of pipe involved, the greater the surface friction that the pump must overcome to get water to its destination. The end result is an overall more efficient system.

Compared to the 0.5 gallon per minute that the old system was able to manage; the new system is expected to produce at least 10 times that extraction rate. "Combined with a better understanding of the subsurface geology at the site, we are highly confident that the new system will achieve the cleanup objectives that were established when the groundwater remedy was selected," Mr. Smith said.

A startup period is underway to verify that the new panels and the battery bank are performing as designed, and the system will operate

as long as the current dry weather conditions persist. When the winter rains finally arrive (and we all know how much the northern California reservoirs need the

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Before and After: The photograph above shows the original solar panel that demonstrated that solar power could be used to clean up contaminated groundwater. The photograph below shows the newer and larger solar panel array that can generate a significantly greater amount of electricity for the new groundwater pump and treatment facility. [Photos by Glenn Anderson and Doug Berwick]

dian Solar, Inc., one of the world's largest solar companies; they are based in Toronto and have experience with solar power projects in California.

Of course, the larger solar array needs

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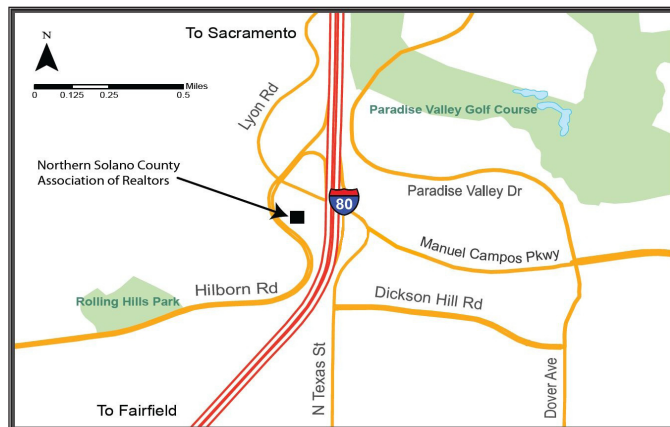
rain and the spring snow melt), the pumps will be shut down until the dry summer conditions return. The down time will allow the field crew to look over the performance data from each system component and suggest improvements for maximum efficiency.



Travis AFB Restoration Advisory Board Meeting

April 17, 2014
7 p.m.

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



LOCATION OF INFORMATION REPOSITORIES

Vacaville Public Library

1020 Ulatis Drive
Vacaville, CA 95688

(707) 449-6290

Monday-Thursday: 10 a.m. - 9 p.m.

Friday-Saturday: 10 a.m. - 5 p.m.

Sunday: 1 p.m. - 5 p.m.

Fairfield-Suisun Com. Library

1150 Kentucky Street
Fairfield, CA 94533

(707) 421-6500

Monday-Thursday: 10 a.m. - 9 p.m.

Friday-Saturday: 10 a.m. - 5 p.m.

Sunday: 1 p.m. - 5 p.m.

Mitchell Memorial Library

510 Travis Boulevard
Travis AFB, CA 94535

(707) 424-3279

Monday-Thursday: 10 a.m. - 9 p.m.

Friday: Closed

Saturday: 12 p.m. - 6 p.m.

Sunday: 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) 424-8871. You can also view our web site at <http://www.travis.af.mil/enviro>

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