



Robins Air Force Base Environmental Advisory Board (EAB)



Fact Sheet

Volume 11, Issue 2, December

The Robins AFB EAB

Recognizing the importance of public involvement in environmental matters, Robins Air Force Base (Robins AFB) has established the Environmental Advisory Board (EAB). The mission of the EAB is to encourage participation of surrounding communities in the Base's environmental programs and allow community members and other stakeholders to have meaningful dialog with Base officials. Specifically, the EAB serves to promote community awareness and obtain constructive community review, comment, and input on current and proposed actions associated with environmental programs at Robins AFB. The EAB supports the Air Force environmental mission of sustaining readiness, being a good neighbor, protecting human health and the environment for the Base and community, and making smart business decisions.

Inside this issue...

- EAB Members Observe Surfactant Flushing Pilot Testing at Solid Waste Management Unit (SWMU) 28..... page 1

EAB MEMBERS OBSERVE SURFACTANT FLUSHING PILOT TESTING AT SWMU 28

During the fall EAB meeting, **Ms. Corinne Walker** with Cape Environmental Management Inc (CAPE) and **Mr. David Alden** with Terus Environmental (Tersus) gave the EAB members an overview of an optimized surfactant flushing program at SWMU 28, one of the Base's restoration sites.



EAB members receive an overview of the SWMU 28 surfactant flushing pilot test set up during the fall EAB meeting from Ms. Walker with CAPE and Mr. David Alden of Tersus.

December 2016 EAB Meeting

The fall EAB tour was held on Thursday, December 1, 2016. EAB members met at the Warner Robins City Hall in Warner Robins, Georgia, where they boarded a bus to SWMU 28, located on the Robins AFB flightline, to observe the processes associated with a pilot test for surfactant flushing. The tour was followed by a brief meeting at Building 359 on Robins AFB.

This *Fact Sheet* provides a summary of the information and topics discussed during the tour.

The next meeting will be held at Centerville City Hall on Thursday, February 2, 2017.

SWMU 28 is located on the north end of the Base near the flightline and Building 45. It is the site of a former fuel release from piping associated with purge fluid tanks. Contamination generally consists of free product and dissolved petroleum hydrocarbons in groundwater.

Remedial activities at SWMU 28 have previously consisted of manual removal of free product with natural attenuation of the dissolved phase contamination in the groundwater. To accelerate cleanup of the site, CAPE, under the Robins AFB Performance-Based Remediation (PBR) contract, has implemented an optimized remedy consisting of Enhanced Fluid Recovery (EFR[®]) and Surfactant Enhanced Aquifer Remediation (SURFAC[®]).

(Continued on page 2)

EAB MEMBERS OBSERVE SURFACTANT FLUSHING PILOT TESTING AT SWMU 28 (Cont'd...)

(Continued from page 1)

EFR[®] and SURFAC[®] events were conducted between 2012 and 2015.

In 2015, a rebound in product thickness was observed at the site. To address the rebound, CAPE is currently modifying the surfactant formula and delivery method to more effectively contact and remove more free product. A site-specific surfactant has been developed in a laboratory using free product and groundwater obtained from the site. The surfactant will be non-emulsifying, which means that the surfactant itself and the free product will remain in separate phases. The delivery method for the site-specific surfactant will be to inject it in a hydraulically controlled flood, which will result in a larger treatment area.

The pilot test for this optimized surfactant flushing process was observed by the EAB members. The general process is described in this Fact Sheet.

Potable water is obtained from an on-site



fire hydrant and mixed surfactant and salt in mixing tanks. The surfactant/salt/water mixture is specially formulated based on testing that has been conducted site using groundwater and free product.

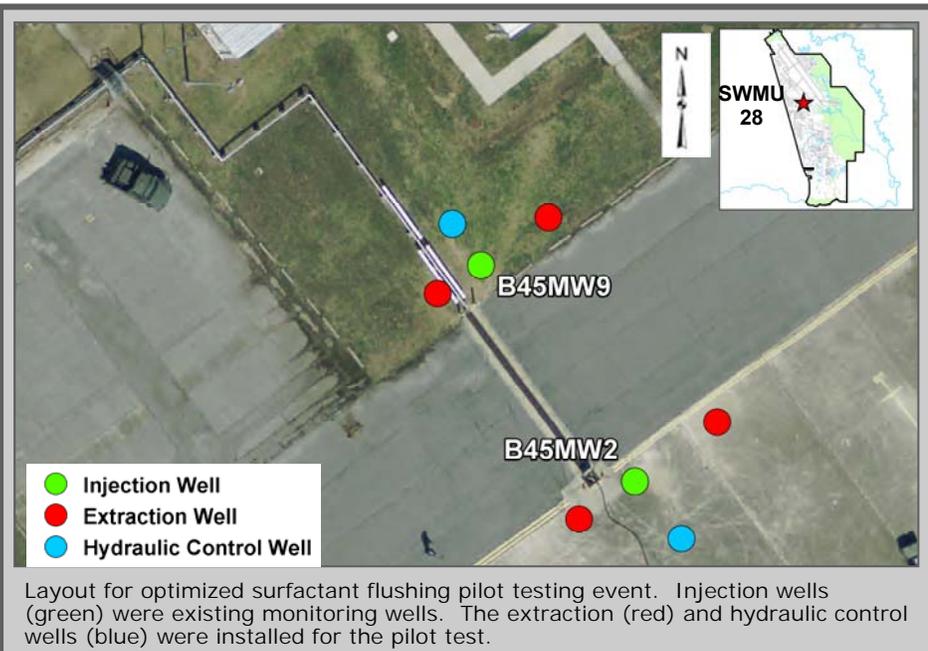


The surfactant/salt/water mixture is injected into the groundwater until the de-

sired conductivity readings are observed in the site extraction wells, as dictated by the design. Next, the polymer/water mixture is injected into the groundwater to further aide in dislodging free

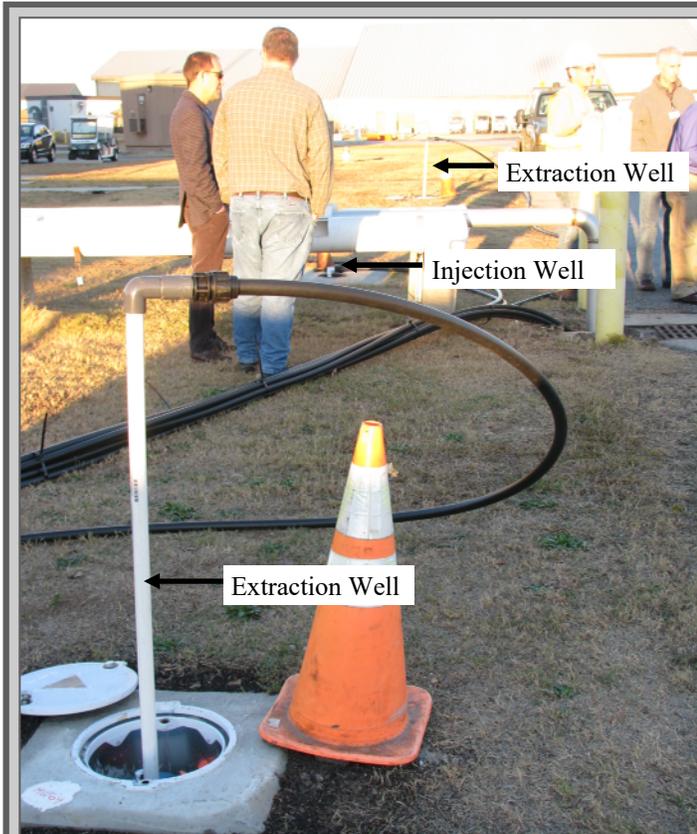
product from the subsurface. Lastly, a potable water flush is conducted to recover free product, surfactant, and polymer from the subsurface. Concurrently, water is also injected into nearby wells to hydraulically control the flow of the injected mixture. Liquid ring pumps are used to draw the groundwater to extraction wells, where it is conveyed to a frac tank.

The frac tank serves as a large scale oil water separator (OWS). In the frac tank, recovered free product can be skimmed from the liquid surface in the tank and subsequently



(Continued on page 4)

EAB MEMBERS OBSERVE SURFACTANT FLUSHING PILOT TESTING AT SWMU 28 (Cont'd...)



View of extraction wells and injection well on the north side of pilot test area.



Close-up view of injection well.



View of manifold used to convey surfactant mixture to the injection wells.



View of frac tank (green) and free product storage tank (silver).



View of water treatment trailer. The silver metal unit in the front is the air stripper.



View of thermal oxidation system for vapor treatment.

EAB MEMBERS OBSERVE SURFACTANT FLUSHING PILOT TESTING AT SWMU 28 (Cont'd...)

(Continued from page 2)

containerized for proper disposal. The remaining water in the frac tank is sent to an OWS and then further treated through bag filters, an air stripper, and granular activated carbon. The water is tested to ensure it meets site-specific discharge limitations prior to being sent to the Base's industrial wastewater treatment plant.

Any vapors generated during the process are treated through a thermal oxidizer. Influent and effluent concentrations are monitored to confirm that 95 percent of any contamination has been destroyed prior to release to the atmosphere.



Phase behavior test vials. Each vial contains the same amount of water, surfactant, and free product with a different salt concentration. The vial in the middle shows good separation of the water, surfactant, and product, indicating an optimized salt concentration for effective treatment.



Mr. Alden demonstrating the phase separation in the vials.

Acronyms

AFB	Air Force Base
CAPE	Cape Environmental Management Inc
EAB	Environmental Advisory Board
EFR®	Enhanced Fluid Recovery
OWS	Oil Water Separator
PBR	Performance-Based Remediation
SURFAC®	Surfactant Enhanced Aquifer Remediation
SWMU	Solid Waste Management Unit
Tersus	Tersus Environmental

For more information regarding the EAB, please contact **Ms. Charline Logue, Robins AFB EAB Manager**, at (478) 327-9268 or visit <http://www.robinseab.org>

Environmental Advisory Board Members

Mr. Alexander Stokes, Robins AFB Installation Co-Chair	Mr. James Harden, Warner Robins Community Member	Mr. Mike Maffeo, Macon Community Member
Dr. Linda Smyth, Macon Community Co-Chair	Mr. John Harley, Centerville Community Member	Dr. Brian E. Rood, Macon Community Co-Chair
Ms. Anna Cornelious, US EPA Region 4 Superfund Division	Mr. Stephen Johnson, Macon Community Member	Mr. Don Thompson, Macon Community Member
Mr. Jim Ashworth GA EPD Hazardous Waste Management	Ms. Debra Jones, Warner Robins Community Member	Mr. Penrose Wolf, Perry Community Member