



Arnold Golf Course
Groundwater Quality Protection
Staff Assistance Visit
Arnold AFB, Tennessee Jul 03



Introduction

At the request of Mr. Paul Mussolino, HQ AFMC/SVPB, HQ AFCEE/ECE golf course environmental program manager, Mr. William H. Bushman, conducted a staff assistance visit (SAV) to Arnold AFB, TN during the week of 7 Jul 03 to assess the issues associated with the 2002 Internal ECAMP finding at the Arnold Golf Course facility.

Goals of the SAV was to completely define the problem, interview installation environmental, engineering, and golf course personnel, determine potential alternative solutions, and make a recommendation for implementation.



The aging Arnold Golf Course pesticide storage facility #2825.

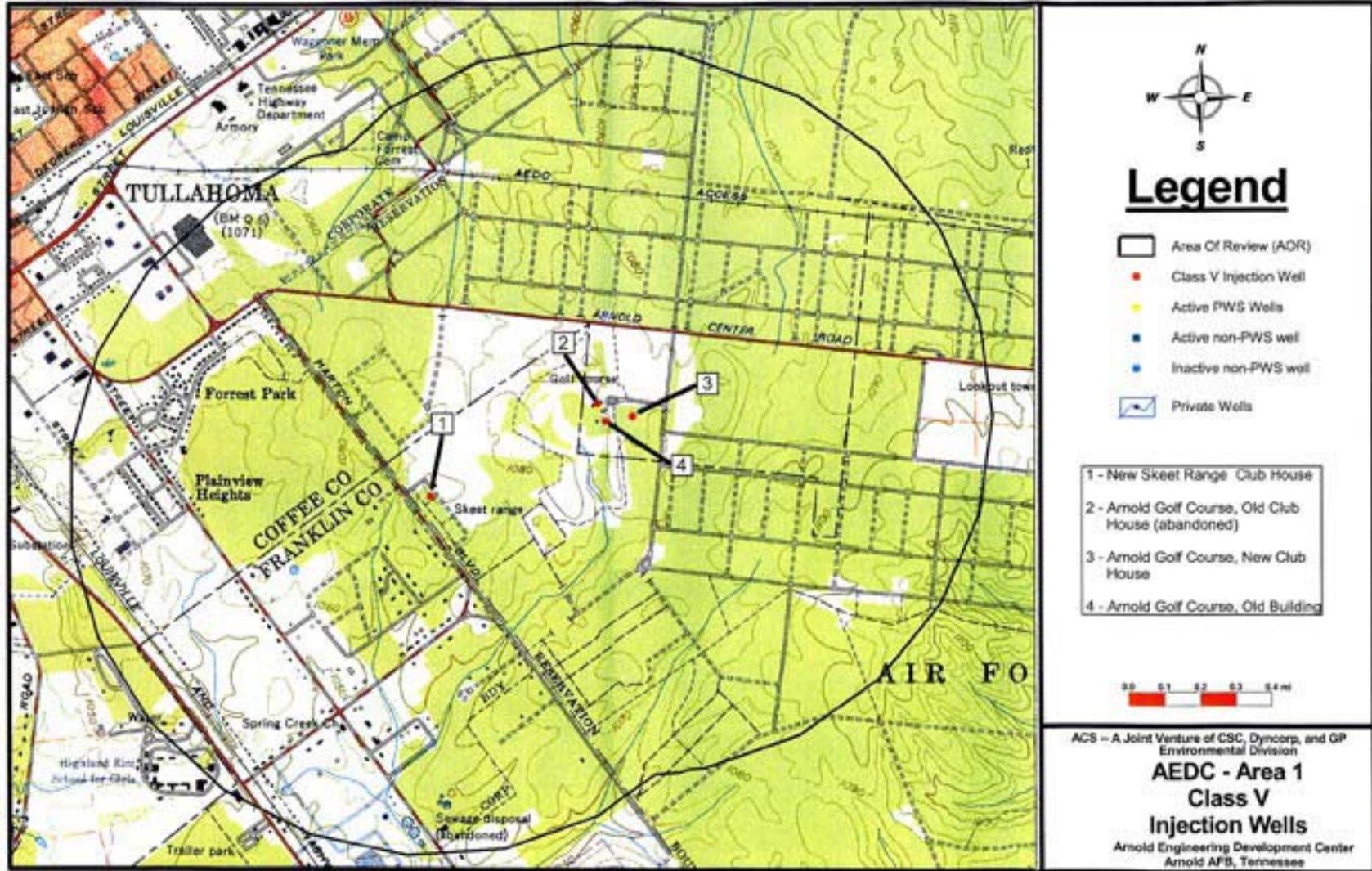
Problem definition

THE GOLF COURSE

Facility #2825 has served as the pesticide storage facility at Arnold Golf Course for many years. It has electrical power, adequate ventilation, and concrete flooring with containment. Immediately adjacent and connected to the storage facility is a concrete basin that is used for mixing and handling pesticides. This basin drains to a sump that can be emptied by a pump or septic tank, depending on which way a valve is turned on the drainpipe. It is this valve that can allow pesticides or pesticide solutions spilled during mixing to possibly be deposited into the septic tank rather than the sump.

The septic tank is within Zone 1 (250 feet according to the state's wellhead protection regulations) of a potable water well that services only the golf course. Installation environmental staff tests the drinking water from this well daily to ensure that it meets state and federal standards.

There is also another well, this one used only for irrigation of the golf course, within 50 feet of the underground septic tank. The *Tennessee Handbook for Golf Course Environmental Management* states that "pesticide mixing/loading facilities must be at least 100 feet from a well."



THE STATE OF TENNESSEE'S INITIAL POSITION

Primacy for the new Environmental Protection Agency (EPA) Underground Injection Control (UIC) regulations recently was passed on to the states for implementation. The Tennessee Department of Environmental and Conservation (TDEC) advised the installation that this permit would not be approved. In addition, the tentatively approved installation-wide Wellhead Protection Plan (WPP), which requires at least 250 feet between a septic tank and a wellhead, would be "held up" until this problem was solved.

THE 2003 INTERNAL ECAMP FINDING

The Arnold Golf Course pesticide storage and mixing facility (Facility #2825) has been deemed as not meeting requirements according to a 2003 Internal ECAMP Finding Form that lists the following defects in Facility #2825 to explain this designation:

- Less than 100 feet from adjacent structures
- Less than 200 feet from a wellhead
- Floor is not coated with an impervious epoxy coating
- Mixing area is connected to a field sump with a connection to a septic system
- Metal building is deteriorating due to age

Facility #2825 and the noted conditions have been in existence for many years. Since Arnold AFB cannot successfully secure their installation-wide UIC permit until these undesirable conditions are fixed, the Arnold Golf Course staff has been tasked with both the funding and environmental responsibility.



Pesticide mixing and storage facility sump is under the concrete block.

ENVIRONMENTAL MANAGEMENT'S ROLE

The installation environmental staff has the responsibility of maintaining all compliance and permitting issues. To satisfy this responsibility, the environmental staff must successfully secure the UIC permit as well as finalizing approval process for the WPP.





Potable water well is housed in this concrete masonry unit structure.



Irrigation supply non-potable well pressure tank and controls.

Potential alternative solutions

THE 2003 INTERNAL ECAMP

The 2003 Internal ECAMP Finding Form suggested solution was “relocating and replacing the facility with one that meets all of the requirements”. No funds or funding source was provided.

ARNOLD AFB ENVIRONMENTAL MANAGEMENT

In the 5 Sep 02 letter to Mr. Scotty Sorrells at the TDEC, “AEDC proposed the following modifications to satisfy TDEC concerns:

- Disconnect and plug the mixing pad drain pipe from the septic tank/field lines
- Install a holding tank and water-tight collection sump inside the existing concrete pad.
- Install a roof over the pesticide-mixing pad.
- Install a sink for hand washing/cleanup operations to be located within the containment pad for the mixing area. The drain from the sink should be directed either to the sump or to the holding tank.”

THE STATE OF TENNESSEE’S LATEST POSITION

In a letter dated 10 Mar 03, Mr. Sorrells acknowledged that his “division considers your [Arnold environmental management’s] methods acceptable”. Unfortunately, the letter goes on to say that the state’s “concurrence with your approach does not imply that this procedure is exempt from future changes or restriction in the UIC Regulations, or any additional requirements set forth by the Division in order to protect the groundwater of Tennessee”.

OTHER PROPOSED SOLUTIONS

Many additional solutions or associated actions were proposed to include:

- Demolition of Facility #2825 and construction of a new, compliant pesticide mixing and storage facility outside of the state's wellhead protection Zone 1.
- Install potable water line from nearest city drinking water source (estimated to be a minimum of 1.5 miles) to golf facilities to eliminate daily testing requirement while simplifying the long-term WPP compliance issues.
- Contract all pesticide application to eliminate need for storage and mixing facility.
- Mix all pesticide applications at base entomology and drive to golf course and spray.



Summary

As a result of the SAV accomplished in Jul 03 by HQ AFCEE/ECE, several conclusions can be reached including:

- Due to a change in environmental compliance regulations, a worn yet serviceable facility that has been in compliance for many years no longer is;
- A bilateral plan of action has been identified to the satisfaction of both the state (Department of Agriculture and Department of Environment and Conservation, Water Supply) and AEDC/SDE;
- The installation engineering staff is both willing and able to move toward at least a short-term solution; and
- Neither the base nor the Air Force Materiel Command Services organizations can provide the funds needed to re-establish compliance.

HQ AFCEE/ECE recommendation

HQ AFCEE/ECE recommends the following course of action:

- Pursue solution proposed by Arnold AFB environmental management staff and approved by TDEC.
- Secure appropriate (in our opinion, environmental) funding immediately to allow Arnold AFB environmental management staff to maintain state, federal, and Air Force compliance requirements.
- Continue maintaining good working relationships with state of Tennessee Departments of Agriculture and Environment and Conservation personnel.



Looking back from the potable well toward the maintenance facility. The pesticide mixing facility is behind and far left of the farthest building visible in the photo.

References

Broder, Michael F. and Samples, Tom, editors/authors, undated. **Tennessee Handbook for Golf Course Environmental Management**, Tennessee Department of Agriculture, Tennessee Valley Authority, The University of Tennessee, TDEC, U. S. EPA.

Everett, Ron, Assessor. **2003 Internal ECAMP Finding Form**, Finding number 3-PM-3, faxed from AEDC to AFCEE 2 May 03.

Unknown, **Memo to the Record**, undated, unsigned.

Duncan, Frank A., **Letter to Mr. Scotty Sorrells**, AEDC/SDE, Arnold AFB, TN, 5 Sep 02.

Sorrells, Scotty D., **Letter to Mr. Frank A. Duncan**, State of Tennessee, Department of Environment and Conservation, Water Supply, 10 Mar 03.

U. S. Air Force, **Air Force Instruction 32-1053**, Pest Management Program, 1 Apr 99.

U. S. Air Force, **U. S. Team Guide: Air Force Supplement, Pesticide Management Compliance Category**, Review Checks, Mar 03.

Department of Defense, **MIL-HDBK-1028/8A**, Military Handbook, Design of Pest Management Facilities, 1 Nov 91.

McEntee, Bill, **Email and attachments**, AEDC/ACS, Arnold AFB, Tennessee, 11 Jun 03.

Mussolino, Paul, **Email and attachments**, HQ AFMC/SVPB, Wright-Patterson AFB, OH, 22 May 03.



For additional assistance or more information, please contact:

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<http://www.afcee.brooks.af.mil/ec/golf/>