

**EPA Science Advisory Board  
Hydraulic Fracturing Research Advisory Panel  
Public Teleconference March 7, 2016  
Oral Statement of Mary Winfree**

**From:** Mary Winfree  
**Sent:** Monday, March 07, 2016 11:14 PM  
**To:** Hanlon, Edward <Hanlon.Edward@epa.gov>  
**Subject:** Re: Public Teleconference of the Science Advisory Board Hydraulic Fracturing Research Advisory Panel

Thank you for allowing my comments. Please see attached a few background notes on sources for Military water monitoring and "Burning springs".

As a follow up to my comments on today's telecom - Assets which include yearly water quality measurements for military bases and often, surrounding wells are available to the public. This is done under the Public Health and Environmental Engineering programs:

This includes well monitoring and personnel monitoring - The USAF makes annual measurements of personnel, especially flying personnel, which include monitoring of blood enzymes and organ function through the Flight Medicine and Public Health groups in cooperation with the Bioenvironmental Engineers. This data is available on request:

**APHC Home > Freedom of Information Act  
Freedom of Information Act**

The Freedom of Information Act generally provides that any person has a right, enforceable in court, to obtain access to federal agency records, except to the extent that such records (or portions of them) are protected from disclosure by one of nine exemptions or by one of three special law enforcement record exclusions. To request APHC records, please contact the APHC FOIA Coordinator below.

**Contact Information**

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If you are not satisfied with the response from the APHC FOIA center, you may contact the Army FOIA Public Liaison:  
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Browse the Reading Room for currently available documents.

<https://phc.amedd.army.mil/topics/foodwater/dw/Pages/default.aspx>

**You are here:** APHC Home > Topics & Services > Food & Drinking Water Protection >

**Drinking Water**

**Drinking Water**



**Information on providing high-quality drinking water and safe recreational waters for DoD installations and deployed forces worldwide.**

## **Services**

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### **Field Water**

Consultative support to deployed forces worldwide to enhance readiness and strengthen US warfighting capability by insuring adequate quantities of high-quality drinking water to sustain the health and strength of our Forces.

### **Installation Drinking Water**

Consultative support to installations worldwide on water security, regulatory guidance, best management practices, and emerging issues providing the Public Health team pertinent resources and a conduit for technical support.

## Recreational Water

Consultative support to Army and Department of Defense activities responsible for ensuring the safety of recreational waters affiliated with their installations. These recreational waters can include swimming pools, beaches, spas, and therapy pools.

### For More Information

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- **Field Water Resources**
- **Related Sites**
- **Resource Materials**

### Related programs and contacts

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- **Food Protection**
- **Environmental Health Engineering**
- **Drinking Water and Sanitation Program (DWSP)**
- **Drinking Water Management and Sanitation**
- **Drinking Water and Sanitation Program**

## Air Force Civil Engineer Center



The Air Force Civil Engineer Center, headquartered at Joint Base San Antonio-Lackland, is a 1,900-person

primary subordinate unit, assigned to Air Force Materiel Command and attached to the Air Force Installation and Mission Support Center, responsible for providing responsive, flexible full-spectrum installation engineering services. AFCEC missions include facility investment planning, design and construction, operations support, real property management, readiness, energy support, environmental compliance and restoration, and audit assertions,

acquisition and program management.  
The unit conducts its operations at  
more than 75 locations worldwide.



# FACT SHEET

## U.S. Air Force Fact Sheet DRINKING WATER PROGRAM AT WRIGHT-PATTERSON AIR FORCE BASE

Available at  
[http://www.wpafb.af.mil/library/factsheets/factsheet\\_print.asp?fsID=6682&page=1](http://www.wpafb.af.mil/library/factsheets/factsheet_print.asp?fsID=6682&page=1)

To comply with Safe Drinking Water Act amendments, Wright-Patterson Air Force Base officials issue an annual report on drinking water quality monitoring. Since we do not have the capability to determine health risks of any chemical compound found in the water, we must rely on the Environmental Protection Agency to tell us what substances are a health risk and what levels are safe for human consumption. The purpose of this report is to advance consumers' understanding of drinking water and heighten awareness of the need to protect our precious water resource.

Drinking water program personnel are responsible for ensuring the base population has an extensive supply of clean drinking water. Representatives from Civil Engineering and Bioenvironmental Engineering meet on a quarterly basis to discuss water quality issues. Civil Engineering is responsible for the daily operation and maintenance of the water system. Bioenvironmental Engineering is responsible for bacteriological and chemical sampling of the water supply and ensures compliance with all state and federal drinking water laws and regulations.

Information and detailed analysis of water quality at Wright-Patterson AFB is contained in the annual **Drinking Water Consumer Confidence Report**.

### **Facts about Wright-Patterson AFB Drinking Water Supply**

- The base drinking water supply is actually two separate community drinking water systems and includes numerous drinking water production wells on the installation.
- The base produces 3.6 million gallons of water each day.

- Over 2000 water samples annually are analyzed for parameters such as hardness, heavy metals and man-made contaminants.
- About 25,000 customers use base water.
- Uses range from home drinking to heavy industrial.

### **Modification to Public Drinking Water Systems**

The Ohio Administrative Code (OAC 3745-91) requires that anyone making modifications to public drinking water systems including tapping into or rerouting an existing system must submit design documents for review and approval prior to initiation of work. This can be accomplished by notifying the 88 ABW/CEANQ Water Quality Program Manager. This will let us know that you are planning a project that could impact the integrity of our water system. The Civil Engineering Water Quality Program manager will provide you with all needed assistance to make sure your project is not impacted by a delay. Call (937) 257-9009.

### **Wellhead Protection**

Another program which is designed to enhance our ability to provide clean drinking water was actually designed after the City of Dayton's program. Dayton leads the entire country in wellhead protection efforts.

It features control mechanisms to discourage the storage of hazardous chemicals above the aquifer which is our source of water. Wright-Patterson AFB borders different municipalities including Dayton and Fairborn. Both cities already have Wellhead Protection Programs in-force. Both cities programs include specific portions of Wright-Patterson AFB in their region of influence. We provide them with data on what missions are supported in those areas and we restrict the storage of inappropriate chemicals.

**Safe Drinking Water Hotline:** 1-800-426-4791.

Fact Sheet Point of Contact  
88th Air Base Wing Public Affairs  
(937) 522-3252

Each base has its own programs in every state. Air Guard Units also have similar monitoring programs. This can give you base lines for wells, active duty personnel, and data may be maintained for retired personnel.

Concerning burning springs:

- **New Report Finds Naturally Occurring Methane in Groundwater in Southern Tier County**
- **USGS Finds Methane in Pa. Water Unrelated to Drilling**

### Comments

**An excerpt from “The northern traveller: and Northern tour; with the routes to the Springs...” by Theodore Dwight and Henry Dilworth Gilpin (1831) reads:**

Springs of water charged with inflammable gas are quite common in Bristol Middlesex and Canandaigua. The gas from the former rises through fissures of the slate from both the margin and the bed of a brook. They form little hillocks of a few feet in diameter and a few inches high of a dark bituminous mould. The gas will burn with a steady flame. In winter they form openings through the snow, and being set on fire, exhibit a steady and lively flame in contact with nothing but snow. In very cold weather it is said tubes of ice are formed round these currents of gas (probably from the freezing of the water contained in it,) to the height of two or three feet, and when lighted in a still evening presenting an appearance even more beautiful than the former.

From a pit which was sunk in one of the hillocks the gas was once conducted through bored logs to the kitchen of a dwelling.

**- See more at: <http://nyhistoric.com/2012/10/burning-springs/#sthash.yN8CDYFy.dpuf>**

Today, Kentucky still has a town named for one such gas vent: Burning Springs, KY in Clay County. Burning Springs was once a bustling place, but its post office closed in 1965 and it's currently listed as an unincorporated community. According to Robert Rennick's "Kentucky Place Names" book:

"A very early settlement, it was named for the ignitable springs of natural gas, in seemingly inexhaustible supply, discovered before 1800 at several sites in the area."

Another Kentucky burning spring was in Magoffin County, which dried up in 1900 after being tapped by an oil & gas company in the 1880s. Today the small community named Burning Fork is a remnant of those days. This spring was a literal spring of water, which emitted from the ground mixed with the natural gas. According to "A Library Of Wonders And Curiosities Found In Nature And Art, Science And Literature", by I. Platt:

A spring here breaks out at the foot of a hill, forming a basin of water about six feet in diameter and two feet deep, at the bottom of which issues a stream of gas, which in volume and force is about equal to the blast forced from a common smith's bellows; but there is no cessation of its force, which is such as to create a violent ebullition in the water. Being heavier than common atmospheric air, the gas, on passing up through the water, constantly occupies the surface, which is still the lower part of an indenture in the earth at that place. On presenting a taper, this gas instantly takes fire, and burns with great brilliancy.

Yet another one was near Beaver Creek in Floyd County, mentioned by Lewis Collins in 1847 his "Historical Sketches of Kentucky". According to Collins, the local gas vent was known as a "place of notoriety" to the early residents of Floyd County, and marveled at how the site "instantly ignites on the application of fire".

POSTED BY JSH AT 12:49 AM

LABELS: BURNING FORK, BURNING SPRINGS, CLAY COUNTY, FLOYD COUNTY, MAGOFFIN COUNTY, NATURAL GAS, TOWNS

The oil and gas industry in West Virginia originated at Burning Springs, located in Wirt County on the Little Kanawha River upstream from Elizabeth. The community's name was derived from two springs from which natural gas escaped and sometimes burned. William Palmer Rathbone began purchasing land here in 1840, eventually gaining more than 10,000 acres. The following year he arrived in Burning Springs with his sons. The Rathbones collected oil from the surface of the river and sold it as an elixir known as "rock oil." They also began drilling for salt brine, but found the brine contaminated by oil.

After the first oil-producing well was drilled in Pennsylvania in 1859, Samuel D. Karnes leased the brine well from Cass Rathbone and began pumping seven barrels of oil from the ground daily. The Rathbones followed suit, drilling just below the mouth of Burning Springs Run. In July 1860, they struck oil and began producing 100 barrels a day. Their next two wells each produced more than 600 barrels daily. The discovery drew thousands of people to Burning Springs, turning it into "a Sodom of sin, anointed with oil." Lighting in the town was provided by the abundant natural gas from the wells. The oil was shipped to a refinery in Parkersburg constructed by Johnson Camden.

The Burning Springs field was one of two producing oil fields in the world at the outset of the Civil War. In May 1863, Confederate Gen. William E. Jones raided Burning Springs and set fire to the oil field. In reporting the spectacular results to Gen. Robert E. Lee, Jones perhaps overestimated the amount of oil burned at 150,000 barrels while noting that it turned the Little Kanawha River into a "sheet of fire." Production resumed a year later, and after the war hundreds of wells were drilled in the area. The oil industry declined rapidly in the Burning Springs area in the latter part of the 19th century. A park was opened at Burning Springs in 2004. Oil is occasionally pumped from the Rathbone well for souvenirs.

Deformation Domains Around Burning Springs Anticline of Central Appalachians:

**ABSTRACT**

**Author(s):** Joe Sweeney

**Article Type:** Meeting abstract

**Abstract:**

Under a contract with the Gas Research Institute, the West Virginia Geological and Economic Survey has begun a two-year project to determine the relationship between Devonian shale production and certain geologic and technical factors, such as geologic structure. Six counties in western West Virginia were selected for study. The north-south-trending Burning Springs anticline bisects those counties and marks the western edge of the Salina salt basin. Two horizons were selected for structural datums--the base of the Huron Shale Member of the Ohio Shale (Upper Devonian), and the base of the Mississippian Greenbrier Group. Point-to-point contouring methods, rather than generalization, revealed deformation containing differing structural styles (domains) throughout the study area, and those domains may have a relationship to the Salina salt basin (Late Silurian).

Structural cross sections reveal that the southern end of the Burning Springs anticline is a gentle fold amplified by thrust faults, probably ramping up from a sole fault in the Salina salt beds. Mississippian, Pennsylvanian, and Permian strata are draped over those thrusts. Lineaments, as defined by structure contours, mark the boundaries of subthrust sheets along the Burning Springs anticline. Orientations of those structural lineaments coincide with orientations of mapped surface lineaments.

Oil production from the Devonian shales is confined to the eastern flank of the Burning Springs anticline in areas overlying the Salina salt basin, and may be related to fracturing caused by intense deformation, in contrast to less intense deformation of rocks west of the salt basin.