



# THE PIPELINE

*Fauquier County Water  
and Sanitation Authority*

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*Serving Fauquier County since 1964*

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## Customers' water quality is our top priority

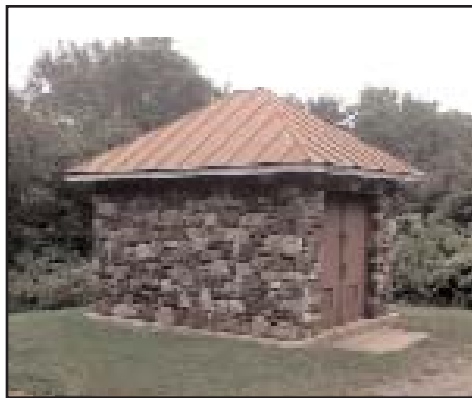
Recent public concerns about the quality of the water being delivered by public suppliers like the Fauquier County Water and Sanitation Authority led to a discussion of the issues with Michael J. Focazio, who represents Marshall District on the FCWSA Board of Directors.

Focazio, of Hume, was appointed to the board in May 2010. Professionally, he is a hydrologist and research program manager with the U. S. Geological Survey in Reston, Va.

He earned a doctorate degree from the University of Connecticut in 1988, and is the author of a number of book chapters, USGS reports, and peer-reviewed research papers on environmental issues and natural resources focused on water.

When asked how the water provided by the FCWSA is checked and maintained, Focazio explained that the water supply must constantly undergo compliance monitoring, following the standards set by the Safe Drinking Water Act, passed in 1974 and amended in 1986 and 1996.

All water provided by the FCWSA is disinfected, but sometimes other measures must be taken. In addition, water levels and other moni-



**The Lee Street Wellhouse at The Plains is unique among FCWSA structures.**

toring and maintenance are continuously done by FCWSA to ensure ample clean water is provided.

“There are very specific guidelines that all public water purveyors in the United States must follow to minimize potential risks to public health due to contaminant exposures,” he said.

“Depending on the particular contaminant that you are looking for, there are levels beyond which you cannot exceed. And if you do exceed the level, you must treat the water to bring it down. If that can't be done, you shut down the well.”

While water quality is key, Focazio believes that finding and providing an adequate supply is influenced by many natural and man-made factors.

The mid-Atlantic area is blessed with a humid climate that provides an abundance of water.

This is because our average rainfall far exceeds evaporation and as a result we do not have the water-supply challenges that we hear about in more arid areas such as the American West where evaporation exceeds rainfall every year.

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### A newsletter for FCWSA customers

The staff of the Fauquier County Water and Sanitation Authority has long believed that maintaining communication with our customers is vital.

For this reason, we are commencing publication of a quarterly newsletter.

Future editions will focus on our service areas, new projects and services, members of the FCWSA staff that serve you, and timely tips to make your experience with the FCWSA a positive one.

Please don't hesitate to give us your feedback. *Contact information is on Page 2.*

# Science, technology and engineering solved the problem

As a result of the 5.8 magnitude earthquake that shook the mid-Atlantic states on Aug. 23, 2011 caused significant damage to one of the three the FCWSA wells serving the Bealeton area. At first it wasn't apparent, since there were no broken pipes spewing water, or buildings tumbling down.

However, a water quality test conducted by the FCWSA the following day revealed that one of the wells providing drinking water had been contaminated with E. Coli bacteria (*Escherichia coli*), which can make humans sick. The well was immediately taken off-line.

Contamination was coming in from the outside and polluting the 350-ft. deep well. A television camera was lowered into the well, revealing that the sanitary seal at the wellhead had been damaged, and that, "... the earthquake had



The heart of the Bealeton microfilter plant is the system of pumps and large filters, through which the water from all three wells is cleaned. Photo courtesy of Emery and Garrett Groundwater Investigations Inc.

permanently changed the earth below, creating pathways for bacteria to enter the water," according to Cheryl St. Amant, FCWSA Associate General Manager Operations.

The engineering firm of Emery & Garrett Groundwater Investigations Inc. of Meredith, N. H. was called in to help.

Finding a solution would not be easy. The first try was inserting a "slip line," or smaller pipe inside the well, in order to seal off the pathways for bacteria to enter the water.

However, due to fractures in the water-bearing bedrock at 62 and 63 feet underground, this failed and bacteria still found a way into the groundwater.

Knowing this, there were only two options: to drill another well and risk the same outcome, or install a treatment system to remove the bacteria.

"The problem was complex and many issues had to be considered by the engineers, such as cost, reli-

ability and sustainability," noted St. Amant.

It was decided to install a microfilter system to remove the bacteria and other contaminants from the groundwater.

First used in the medical field for blood filtration, the process involves thousands of strands of hollow fibers.

"Water is forced to go through the small holes in the fiber and get stuck outside, while clean water goes into the hollow fiber and out the top," explained St. Amant. "Thousands of these fibers are put into a tube, which creates the micro-filter system."

In addition to filtering the water from the contaminated well, water from the other two wells is also filtered through the system, guaranteeing clean water for FCWSA customers in the Bealeton area, and allowing for future growth.

A good, high-production well was saved, using a combination of science, technology and engineering.

## The Pipeline

Fauquier county Water and Sanitation Authority

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## Meet our staff

# Raymond Searls, veteran FCWSA Chief Operator

One of the chief assets of the Fauquier County Water and Sanitation Authority is its people, many of whom have dedicated all, or a significant part of their careers, to the Authority.

Raymond A. Searls, of Culpeper, 54, has worked for the FCWSA for nearly three decades, and is the Chief Operator of the Remington Wastewater Treatment Plant, a position he has held for the past five years.

By any measurement, he has “worked his way up,” and he has been able to do it all in Fauquier.

Raymond was originally hired in July 1987 as a laborer working for the Authority’s Inflow and Infiltration (I&I) Program, under the Operations and Maintenance Department. His job was to go to different sites and measure the amount flowing in during dry times of the year, and then return during rainy times, to determine the amount of inflow.

“We only had one backhoe and a truck,” he recalled. “The idea was good, but larger than they expected.”



**The Remington Plant can treat up to two million gallons of sewage per day.**

After a year in I&I, Raymond was assigned to work with another man on the electrical equipment then in use. By mid-1988, he started



**Raymond Searls at his office at the Remington Wastewater Treatment Plant. Searls uses the latest technology to maintain efficient operation of the plant.**

as a trainee at the Remington Wastewater Plant, and his professional education began.

Along with the on-the-job training at the Remington plant, he took correspondence courses. Within six months he had earned his Class IV operator’s license, and took a week of additional schooling at Northern Virginia Community College, “...basically a prep class,” he explained.

A senior operator’s position opened at the Marshall Wastewater Treatment Plant, and Raymond was offered the job. A smaller plant than the one at Remington, going to Marshall was the perfect next step in his career. There was a major retooling project at Marshall in 1995.

By 1997, Raymond was back at the Remington plant, where he was the senior operator. He served in this capacity until 2008, when he was promoted to chief operator at the Marshall plant.

After three years at Marshall, he was back at Remington, where he has been the chief operator for the past

five years.

Raymond notes that working at two of the three plants – which function differently – has given him deep cross-training, which he has shared with the other operators. This is important, due to the small number of employees at the plants – five at Remington, three at Marshall, and three at Vint Hill.

“We instituted a cross-training program, where our operators would spend a week or two at each other’s wastewater treatment plant,” he recalled.

Raymond speaks about the improvements in wastewater treatment that he has witnessed over the past 27½ years.

Although all he is comfortable using the technical terms, he plainly expresses his interest in what he does at the FCWSA every day.

“Wastewater treatment is just fascinating,” he said. “There are just so many things you can do... just one adjustment, and you can totally change the outcome.”

# Water quality

(Continued from page 1)

However, because of the complex nature of our local geology, potential pollution sources, political, and other factors not all the water that naturally exists in Fauquier County is available to water managers.

“Drilling a new well is not the most expensive part. It’s finding the water in adequate supply and quality,” Focazio explained.

“We have Emory & Garrett, a hydrogeologic consulting firm that the county uses all the time, to do the exploration, drilling, and development of the wells. They have a process that they go through, using geophysics, to decide, ‘Let’s drill here.’”

Known as an aquifer, the ground that is tapped for wells in the Piedmont region is underlain by solid rock, with water found in the cracks.

Drilling through this bedrock is not like drilling into the sand and gravel in the Tidewater, which yields water relatively easily; here, you must find a large crack, or number of smaller cracks that are connected together, in order to get the water necessary to produce an adequate yield.

What the consultants do, “Is as much an art as it is a science and it takes many years of professional experience,” said Focazio. “It’s much better than dowsing, which has never been scientifically proven to be effective, but hydrogeological exploration is a huge, up-front cost and it cannot be guaranteed successful.”

And once water is found, it must be determined if there will be satisfactory yield from a well now and in the future, if the well will cause water levels to drop in other nearby wells and streams, and what water treatments will be required.

# FCWSA ‘Frequently Asked Questions’

*This is the first in a series of questions and answers about the Fauquier County Water and Sanitation Authority, how it works, and who to call when you have a problem.*

**Q: We moved from a city that provided water and sanitation services through its public works department. How is the FCWSA different?**

**A:** Public works departments are owned and operated by the municipality, and supported by the taxes paid by all residents and by the fees charged those who use the services. Service authorities are independent political subdivisions of the Commonwealth and are intended to be solely supported by the revenues paid by its customers, and connection/availability fees charged to developers.

**Q: How long has the Authority been in business?**

**A:** The FCWSA was chartered by the Commonwealth of Virginia in May 1964, after Fauquier County leaders and the health department became aware that there were few county water or sanitation regulations or standards in place to handle the growth that was coming in the near future. In fact, it was estimated that the population of Fauquier County would reach 75,000 by 1980 (it is about 66,000 today). Choosing the Authority model was the best solution.

**Q: How big is the FCWSA?**

**A:** By the end of 2016, it is estimated that FCWSA assets were valued at over \$75 million. Water production facilities include 35 wells, eight major storage tanks and about

140 miles of supply pipe. The FCWSA has three wastewater treatment plants, 16 pumping stations, and 100 miles of collection pipe. Annual operating expenses, at about \$8 million, are covered by customers’ service fees. FCWSA staff now numbers 43 men and women in all departments.

**Q: Who is my representative on the FCWSA board?**

**A:** If you live in Center District, your representative is Steven Cosby; in Marshall District, Michael Focazio; in Cedar Run District, Raymond Graham; in Lee District, Paul Blackmer; and in Scott District, Bill Downey.

**Q: What agencies regulate the FCWSA?**

**A:** The Authority operates under the regulations of the Virginia Department of Environmental Quality, the Virginia Department of Health, and the U.S. Environmental Protection Agency.

**Q: Where does the FCWSA get its water?**

**A:** County policies restrict FCWSA to groundwater sources, rather than streams and impoundments.

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