



....a dialogue for California's water conservation community

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Executive Director: Mary Ann Dickinson

Newsletter Editor: John Koeller

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- **Handbook of Water Use and Conservation is now available!**
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- **Urinals that you cannot flush...no matter how hard you try!**
Learn more about Waterless™ and Waterfree™ urinals
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- 1. **ULF Toilets certified for the Los Angeles Program**
Another three toilets met the requirements of the Los Angeles SPS...the total now stands at 28....and more are in process

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Full Details

1. Interview with Amy Vickers

Another individual "pioneer" familiar to many of you is Amy Vickers, president of Amy Vickers & Associates, Inc. since 1991. Her experience with water-efficient plumbing fixtures dates back to the 1980s, when she, like a few others, pursued the adoption of the 1.6-gallon toilet as a standard. However, her experience extends well beyond toilets. In fact, she is the author of *Handbook of Water Use and Conservation*, being published by WaterPlow Press™ this month. (See description and ordering information below.)

In addition to the *Handbook*, Ms. Vickers has published more than 30 professional papers and technical articles on water supply issues and conservation policy, technology, and programs, impacts of water demand reductions on utility systems, economic incentives for conservation, efficient plumbing fixtures and appliances, and sustainable water use. She was the subject of our most recent interview regarding plumbing fixtures:

JK: When was your earliest involvement with water conservation and what motivated you to get involved with plumbing fixtures as a possible avenue to water conservation?

AV: I trace my earliest involvement with water conservation back to the early 1960s drought in the Northeast when I was a little kid. I have a clear recollection of playing under a sprinkler on a hot summer day and my father coming out to the front porch to explain the drought and that I shouldn't be wasting water. I took his advice.

Low-volume toilets became an interest of mine starting in 1986 while I was working at the New York City Council as the director of the Committee on Environmental Protection. At that time, NYC's water demand was growing and the City was looking at alternative - and hugely expensive - additional water supply options. I became intrigued that the city wasn't taking a serious look at water conservation, especially since it seemed to be so much more cost-effective than the supply options that were being considered.

Around that same time I heard about the local 1.6-gallons-per-flush (gpf) ordinance passed in Glendale, Arizona, and spoke with Dave Schultz, Glendale's conservation manager. I was very impressed with Dave's innovative thinking and practical action on the matter of water-efficient toilets; fine-tuning toilets to save water sounded like a very sensible thing to do. Why weren't all toilets water-efficient? At that point in my brief political career in NYC, I was feeling very empowered by several pieces of legislation I had drafted (on hazardous materials emergency response and asbestos removal) and

helped to get passed into law, so shortly after I got off the phone with Dave I remember thinking "I'm going to make this happen."

About then, I heard that the Massachusetts Water Resources Authority, a newly organized water wholesaler for metro Boston, was about to launch a comprehensive water conservation program, so I applied for and was hired to work in their capital engineering department in 1987. While being interviewed, I mentioned my goal to change the state plumbing code, so I walked into that job with an agenda for the 1.6-gpf toilet.

JK: Where did the opposition come from?

AV: The "opposition" was certainly loud at times, but they were so creaky in their thinking that I never felt that intimidated by them. I never doubted that the 1.6 would be successful. I've always felt implicitly that it's a very reasonable and needed change in one of the ways that Americans use water. The 1.6-gpf took on a life of its own at a certain point, which is why I think it was really meant to be. After legislation passed in Massachusetts, I started working soon thereafter on a draft bill for national requirements. At that same time, I also became a member of the American Water Works Association (AWWA) and started meeting lots of very dedicated water conservation professionals who were implementing all kinds of programs and initiatives. Together, we dove into the issue and change-agents like Liz Gardener (Denver Water), Al Dietemann (Seattle Water), Mary Ann Dickinson (then with Connecticut Regional Water Authority), and Ed Osann (then with National Wildlife Federation) started working in their states and cities to pass codes and other regulations requiring water-efficient toilets and other fixtures. After 17 states had passed legislation mandating 1.6-gpf toilets in new construction, how could the plumbing industry and our great leaders in Washington ignore this formidable water conservation lobby?

JK: Is there anything that you would have done differently as you pursued water conservation over the years?

AV: Looking back, I think some of the battles we've had in the water conservation community to get the 1.6-gpf requirement passed -- both on the state and national levels -- were about differences in generational perspectives and goals. Now, I think water managers and policymakers are starting to understand that water conservation and many other types of initiatives offer practical and economic benefits that are worth pursuing.

JK: What part do you see for yourself in this area of water conservation over the next few years?

AV: For now, I want to stay close to the theme of helping to advance technologies and practices that save water. I just finished authoring a 500-page book (***Handbook of Water Use and Conservation***, being released by WaterPlow Press™ in May 2001) on water use and conservation measures for every major use sector: residential, landscape, commercial-industrial-institutional, and agriculture. I'm keenly interested in

continuing to expand the book's scope, depth, and readership in the years ahead. I love research and writing – the more the better!

JK: Today, we see many new professionals entering the field of resource conservation and learning as fast as they can. What suggestions would you give these folks?

AV: Be practical and work on issues for which there are clear, definitive results that will produce water savings. There are always opportunities to fine-tune policies, but if you want to be effective, remember the adage, "Actions speak louder than words."

2. Handbook of Water Use and Conservation by Amy Vickers

(464 pages, hardcover, 8.5 x 11 inches)

This excellent 464-page state-of-the-art reference publication is available through the Council at a significant discount from the \$99.95 cover price: \$75.00 plus sales tax and postage. This is one of the benefits of membership in the Council!

Among the many topics covered in the *Handbook* are these:

- Planning a successful water conservation program, including Federal planning guidelines, integrated resource planning, and conservation measures and incentives
- Residential and domestic water use and efficiency measures: toilets, urinals, showerheads, faucets, clothes washers, and dishwashers
- Landscape water use and efficiency measures: landscape planning and design, native and low-water-use turf and plants, irrigation systems and devices, irrigation scheduling, soil improvements, and landscape and irrigation system maintenance
- Industrial, commercial, and institutional water use and efficiency measures: metering and sub-metering, cleaning and sanitation, process water, commercial food service, laundries and laundromats, swimming pools, zoos, cooling and heating systems, and maintenance practices
- Benefits and costs of residential, landscape and CII water conservation
- Sample worksheets for residential and CII audits
- Agricultural water use and efficiency measures: water use measurement, soil moisture monitoring, irrigation scheduling, laser leveling, furrow diking, low energy precision application, surge valves, drip irrigation, tailwater reuse, conservation tillage, and canal and conveyance system lining and management

- The water conservation network: resources for the reader needed to locate conservation organizations, government agencies and programs, international organizations and agencies, water conservation publications, and directories for water-efficient products in all categories

To order the Handbook, please mail your check to the Council office, payable to CUWCC in the amount of \$84.13 per book (\$75.00 plus \$5.63 sales tax plus \$3.50 postage). Be sure to include your mailing address and specify that you are ordering the "HANDBOOK OF WATER USE AND CONSERVATION." Books will be mailed when they are received from the publisher, likely by the first of June.

3. Urinals that you cannot flush...no matter how hard you try!

The national standard for new urinals specifies a maximum flush volume of 1.0 gallons of water. However, the importance of water conservation and their simplicity made other types of urinals an attractive alternative to the standard flush-type fixtures. Urinals that function without water (and, of course, their required flush valve) were first offered by Waterless Company in the U.S. marketplace around 1991. Despite active marketing by the industry, they have not yet captured a large share of water conservation's retrofit market. That may be about to change.

Two companies are intensively marketing their water-conserving urinal products, focusing not just on the retrofit market, but on new construction as well. Those companies are: Waterless Company, located in Del Mar, CA, and Falcon Waterfree Technologies, headquartered in Los Angeles. Both firms offer a series of water-conserving urinal products for a variety of applications.

From a technical standpoint, these urinals hold a significant advantage over the standard flush-type urinal in that they require no water supply and, thus, no flushometer valve or associated plumbing. Obviously, this saves on the initial costs of installation. These water-conserving urinals drain to a standard waste line.

The design technology used by the two manufacturers is similar. They both use a cartridge in the urinal that contains a special biodegradable liquid within a unique trap system. This special liquid is lighter than other liquids and, therefore, floats on and seals the urine from the room atmosphere. The cartridge and the trap system designs, however, are quite different for the two manufacturers.

Past barriers to the use of these products have focused largely upon the reputation that they had for creating odors. In addition, installation within a high-use location was presumed to be necessary in order to secure savings sufficient for a short economic payback. Several recent studies addressed these concerns.

UCLA Study

In September 2000, the University of California Los Angeles (UCLA) installed a Falcon Waterfree™ urinal in a men's restroom in a classroom building (Boelter Hall) for the purpose of: (a) comparing bacterial growth rates and odors with an older 3.0 gallons-per-flush (gpf) urinal; (b) measuring usage; and (c) performing lifecycle cost analysis modeling of waterfree urinal installation within typical educational institutions. The entire assignment was performed by a UCLA research team at the request of Falcon.

Through a process in which the UCLA researchers measured bacterial growth and ammonia development, they concluded that the odors at the Waterfree™ urinal were actually less than those at the standard flush-type urinal.

Usage of the Falcon Waterfree™ unit averaged slightly more than 116 uses per day in the UCLA classroom building. The research team performed a life cycle cost analysis for each of three case studies on three of the larger unified school districts in California (Oakland, Los Angeles, Long Beach). In those districts, average urinal usage was calculated to range from 38 to 40 uses per school day per urinal. At those rates, simple life cycle analysis payback ranged from 1.6 to 2.7 years.

To read the executive summary of this study, visit:

<http://www.falconwaterfree.com/ucla.htm>

For a copy of the entire study, contact:

Ms. Aline Daniel
Falcon Waterfree Technologies LLC
(310) 209-7238 or email to:
adaniel@falconwaterfree.com

Petaluma Study

The Petaluma study, completed in February 2001, focused on comparing water consumption between a standard flushometer valve urinal (1.0-gpf rated fixture that was actually flushing at 0.75-gpf) and the Waterless No-Flush™ and Waterfree™ urinals from the two manufacturers. In addition, the consultant also evaluated the cost effectiveness of a replacement program, using the city's own water and wastewater treatment costs as the basis for analysis. The study did not address any of the odor issues covered in the UCLA study.

Measured usage of the urinals was 47 uses per day at the industrial site where the fixtures were installed. At that level of usage and considering that the new units replaced a fixture flushing at 0.75-gpf, simple payback ranged between 3.9 and 4.3 years before any replacement incentives were offered.

This study, also very comprehensive, may be obtained from:

Mr. Hal McCutchan
City of Petaluma Water Conservation
(707) 778-4507
haroldtm@scwa.ca.gov

Evaluating the Urinal as a Retrofit Opportunity

When considering the replacement of existing flush-type urinals with one of the Waterfree™ or Waterless No-Flush™ urinals, one should carefully consider all of the following before making a product decision:

1. The design of the cartridges differs between the two manufacturers' products, possibly affecting function, performance, and cartridge longevity. The means by which the cartridges are inserted into and attached to the urinal housing are different; this factor should be evaluated as well.
2. The materials comprising the urinal housings themselves differ between the two manufacturers' products, possibly affecting durability, and maintenance and installation costs. (Note: Where applicable, both manufacturers' fixtures meet the requirements of ANSI Z124.9-1994.)
3. The initial costs of purchase differ between the two manufacturers; the costs of replacement cartridges differ as well. These significant differences need to be evaluated in terms of life cycle cost within the end-use application being considered.

In addition to reviewing the study reports already completed, you are urged to contact the manufacturers and seek out the information that will enable you to compare the products.

Contacting the Manufacturers

To contact the two manufacturers:

Waterless Company: www.waterless.com

Mr. Klaus Reichardt
Waterless Company LLC
(800) 244-6364 or email to:
klaus@waterless.com

Falcon Waterfree Technologies: www.falconwaterfree.com

Ms. Aline Daniel
Falcon Waterfree Technologies LLC
(310) 209-7238 or email to:
adaniel@falconwaterfree.com



1. Canada Mortgage & Housing Corporation (CMHC) Dual-Flush Study

The CMHC (somewhat similar to the U.S. HUD organization) has recently undertaken a major Canada-wide study of dual-flush toilets. Project Manager Catherine Soroczan of the CMHC is working together with Veritec Consulting of Ontario to complete the study before the end of 2001. Bill Gauley of Veritec provides some insight into the project:

There are four primary objectives associated with this project:

1. To determine public perception, acceptance, and satisfaction with dual-flush toilets;
2. To field test the performance of the dual-flush toilets;
3. To assess the consumption rates of the dual-flush toilets vs. 1.6-gallon and 3.5-gallon toilets over a period of about four months; and
4. To determine the cost-effectiveness of dual-flush toilets vs. 1.6-gallon and 3.5-gallon toilets.

Although a project with similar goals was recently completed in Seattle (see Vol. 1, No. 2 of "The Toilet Paper"), the methodology used to collect data is completely different. The CMHC project includes the installation of approximately 60 Caroma dual-flush toilets across Canada (12 cities in 7 provinces) in single-family homes, schools, offices, apartments, and change rooms. While the majority of these 60 dual-flush toilets will be compared to the pre-existing toilets (which may range from 3.5-gallons to 5.0-gallons and over), a number of them will also be directly compared to 14 of the newer technology products (7 Toto Drake toilets and 7 Niagara Flapperless toilets).

Because of the wide range of building types included in the program, it is not possible to collect the required data by data logging building water meters (data logging works best in single-family homes where the likelihood of having simultaneous water use events is limited).

The approach to be used in the CMHC project involves electronic flush counters and the temporary installation of inline water meters in order to measure and compare the performance of the existing and new toilets in each location. As such, the flush volume of each toilet in the program (including the existing toilets) will be measured using an inline water meter. Flush counters will be installed within the tank of each toilet to measure the number of flushes during both the pre-monitoring and post-monitoring

period. One month of pre-monitoring and two months of post-monitoring will be completed as part of the program.

By ascertaining the number of flushes per day during the pre- and post-monitoring periods, as well as the flush volumes of the existing and new toilets, it will be possible to evaluate the water savings per flush as well as the total water savings resulting from toilet replacement. This will then provide the data needed to determine the cost-benefit factors associated with installing the new toilets. This data, along with the results of the customer satisfaction surveys distributed as part of the program, will be documented in a final report, which should be available by October 2001.

Bill may be reached at:

Bill Gauley, P.E.
Veritec Consulting Inc.
(905) 696-9391, ext. 102
bill.gauley@sympatico.ca

Catherine may be reached at:

Catherine Soroczan
Canada Mortgage and Housing Corporation
(613) 748-2284
csorocza@cmhc-schl.gc.ca

2. *New ULF Toilets Certified Under the Los Angeles SPS*

Three additional fixtures have been tested and found to meet the requirements of the Los Angeles Supplementary Purchase Specification (SPS), bringing the total number of toilet fixtures meeting the SPS to 28. Those toilets are:

Eljer Cypress 131-2120
Eljer Cypress 131-2125 (Elongated)
Eljer Cypress 131-2175 (ADA)

All three units use the Coast Foundry Ultra Blue flapper.

Several other manufacturers have submitted models for testing; expect these models to be added to the SPS-certified list by June 2001.

3. *"Best Toilets"*

Here is a tip that just came across the Council's desk.....With the ambitious catchphrase, "The place to go BEFORE you have to," *Best Toilets'* commodious goal is to provide the discerning patron with a database of the best public restroom facilities in major cities. Next time you need to "go" in Boston, San Francisco, New York, or one of

eight other cities, refer to the reader reviews *Best Toilets* has to offer. Better yet, submit your own review of a public toilet near and dear to your heart.

[\(link no longer active - no replacement\)](#)

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Upcoming Issues: Look for...

- More interviews
- Links to new products and manufacturers
- Connections between water and energy savings
- and more

Funded under a project by the U.S. Bureau of Reclamation