



Residential Water Reuse Systems

by Christine Vail

When Robert Fenwick-Smith, his wife, Felice, and their daughters moved to Boulder in 2007, they were attracted by the location, but also by the opportunity to become part of a unique green community. The Fenwick-Smiths spent twenty years in Europe prior to moving to Boulder and wanted to incorporate sustainable programs into their lives.

The search for residential green building options led the family down a path of conservation on all levels. They rapidly adopted well-publicized green building strategies: high insulation, geothermal heating\cooling, active\passive solar, building size, indoor air quality, sustainable building materials, xeriscaping, and sub-surface irrigation. But the Fenwick-Smiths were interested in taking even more innovative steps.

The city of Boulder's Green Points Program awards additional points (up to 10) for measures that have "tangible and demonstrable benefits beyond those outlined in the Green Points Program." The possibility of extra points included an emerging technology that Robert felt is essential to our drought-stricken, arid Colorado climate—greywater recycling.

Robert did his research and selected an emerging, locally manufactured product by Water Legacy, LLC—the WL-55. The WL-55 was designed to service the typical 4-to-6 person household. It is a stand-alone, fully integrated system that collects used bathing greywater, filters and disinfects this water, and manages the automatic supply to the toilets.

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The WL-55 is fully automatic and requires no operator intervention. In the event of insufficient greywater for flushing of toilets, the WL-55 will complement with fresh water.

The Water Legacy Residential Greywater Reclamation System (WL-55) conserves potable water by recycling spent water otherwise drained to the sewer. Residential users can save valuable drinking water by flushing toilets with spent greywater that would otherwise flow down the drain despite its beneficial use potential.

The WL-55 consists primarily of a water filter, ultraviolet-light disinfection system, hydrogen peroxide (H₂O₂) disinfection system, and a 55-gallon water storage tank. Greywater is collected from showers, baths, and hand sinks via a greywater plumbing system that is separate from the black water plumbing system. Water collected is first filtered by the WL-55. The greywater is then dosed with the disinfecting agent. Finally, greywater passes through an ultraviolet-light disinfection system. Disinfected greywater is stored in a 55-gallon drum for reuse when a toilet is flushed, creating demand for the treated water.

Water conservation in residential home use typically has been addressed through usage of low-flush toilets, low-flow plumbing fixtures, and efficient appliances. But the desire to stop flushing good drinking water down the toilets was, for the Fenwick-Smiths, a vital part of residential resource conservation.

A WL-55 has been in operation in the Fenwick-Smith's home since July 2008. The following is a dialogue between Robert and Water Legacy's Mike Vail:

MV: In your mind, what one feature of the WL-55 is the most beneficial to conservation of water?

RFS: We no longer use drinking water to flush our toilets. In a world where billions of people have limited access to drinking water, it is scandalous to use this precious resource to flush our toilets.

MV: You have had a WL-55 in your home for seven months. How would you describe its impact on your day-to-day life?

RFS: NONE! That is the beauty of greywater recycling: you reduce your drinking water consumption by 30% without any impact on your quality of life! You still just flush your toilet, but do it with filtered and disinfected greywater.

MV: As an innovator and forward thinker, what do you think can be done to further educate the average homeowner as to the benefits of WL-55?

RFS: A fundamental problem is that, in the western world, the population has come to expect

ample subsidized water. And as with any free or cheap commodity, we waste it. We must educate Americans to understand that water is a limited valuable resource. This will probably require legislation. Tucson, Arizona, is the first major city in the U.S. to enact such legislation—rendering greywater recycling mandatory in new residential buildings as of July 2010.

The U.S. government projects that at least 36 states will face water shortages by 2012 because of a combination of rising temperatures, drought, population growth, urban sprawl, waste, and excess. The 2007 Atlanta crisis serves as a clear warning that even perceived “wet” states are not immune to water shortages.

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Various quotes and statements bring to mind the seriousness of the water crisis our world will face in a short time. The most striking to this author is by Thomas Hartmann, in “The Last Hours of Ancient Sunlight.” He states, “We can survive without oil and energy, but our planet cannot survive without water”.

The inhabitants of this earth, the citizens of this country, and the people of the drought-stricken western United States must act to preserve our water. A grassroots effort can begin at home with the installation of low-flow plumbing units and general conservation. We can create new methods of conservation through legislation of mandated greywater systems in new commercial and residential construction. Water Legacy offers the opportunity to begin greywater reuse in your home. Don't flush fresh water! •

To learn more about ways you can conserve water, visit www.conservationcenter.org/w_main.htm or www.waterlegacy.com



Robert Fenwick-Smith with his Water Legacy Residential Greywater Reclamation System (WL-55)

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