

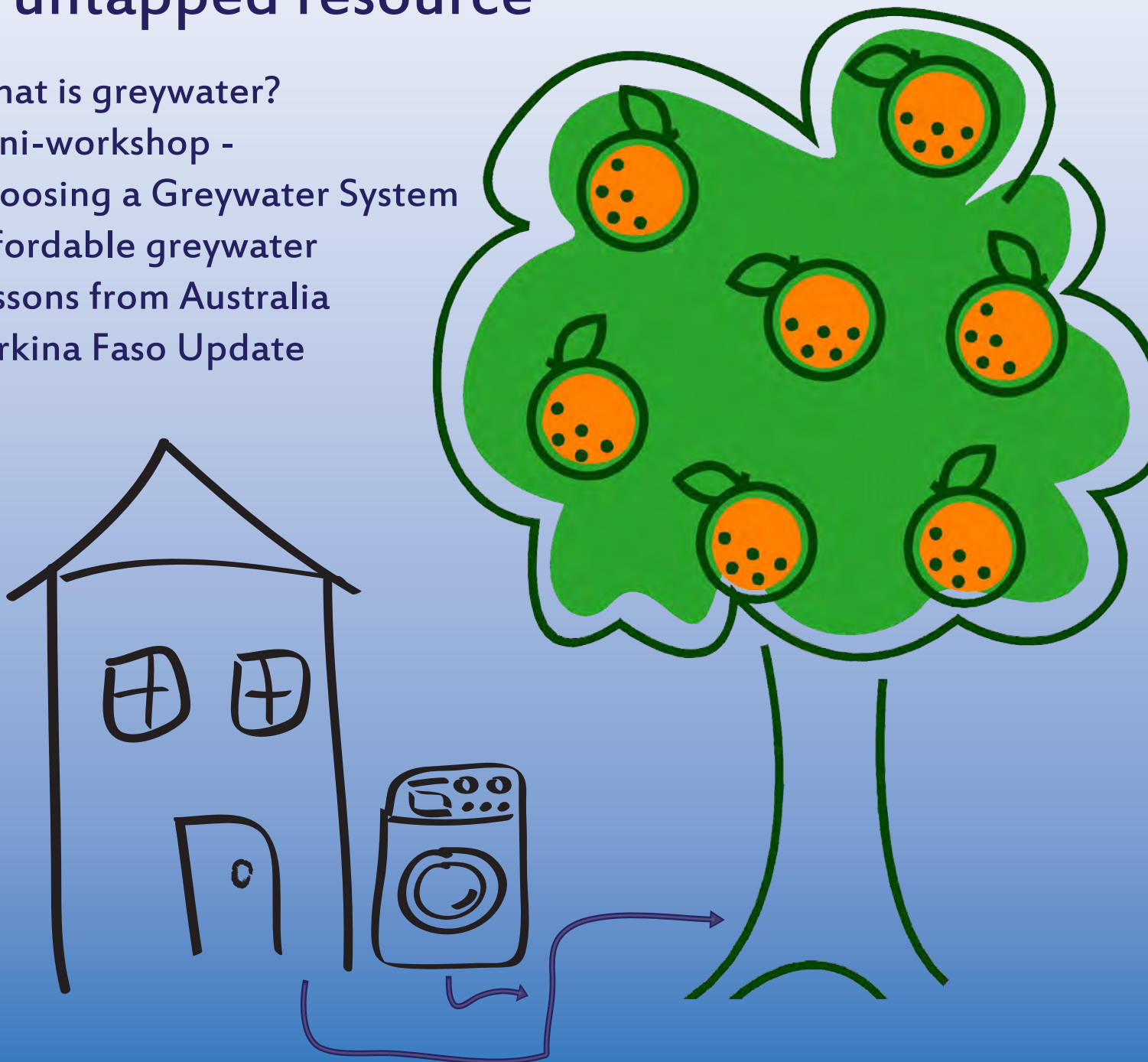
A Watershed Moment

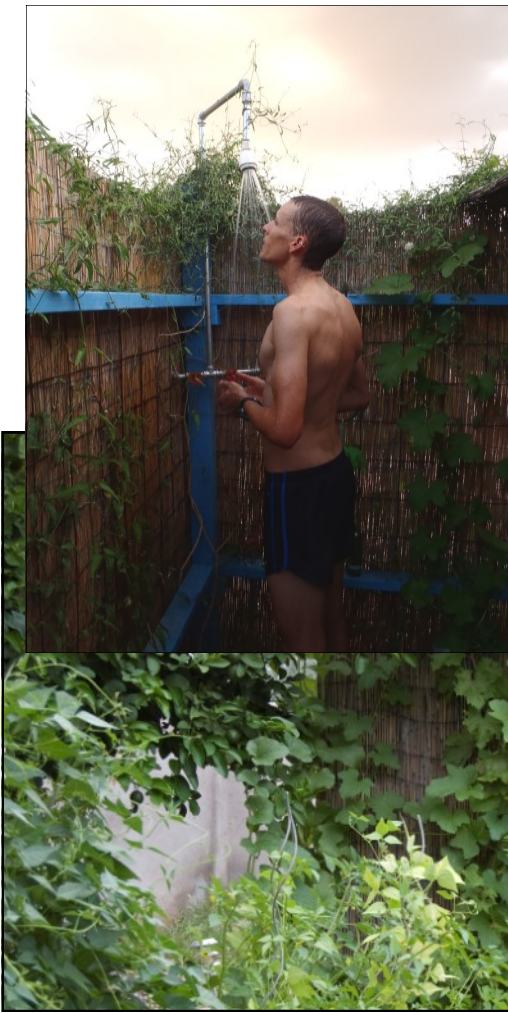
Summer 2010

Greywater:

An untapped resource

- ◆ What is greywater?
- ◆ Mini-workshop -
Choosing a Greywater System
- ◆ Affordable greywater
- ◆ Lessons from Australia
- ◆ Burkina Faso Update





Dear Readers,

Greywater is a part of our everyday life, yet most of us don't consider the water that goes down the drain. This 'wastewater' is actually a valuable resource that can be diverted to landscapes to grow vegetation and food. Through this issue, WMG's goal is to provide you with the basic facts about greywater and the tools to utilize this resource in your own life. Even if water scarcity is not an issue where you live, consider the energy and infrastructure costs of transporting and treating water. Using greywater can significantly reduce per capita

water use, saving costs and reducing carbon footprints.

This issue also includes an inspirational report by Jared Buono on page five about WMG's recent work in Burkina Faso, Africa.

◀ Lisa Shipek

An outdoor shower is a summer treat to bathe and enjoy the outdoors while providing water to thirsty landscapes. This outdoor shower includes a black tank for solar heating and waters a fig, lemon tree, and grape.

Greywater: An Untapped Resource

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◀ Lisa Shipek, Executive Director

In June, when 100-degree-plus temperatures parch the Tucson landscape, fresh fruit is ripening in my backyard. The hot summer months bring homegrown peaches, apricots, and figs.

There is always satisfaction in eating homegrown food, but I especially relish this delicious summer treat knowing the water that cleans my clothes has nourished my peaches and apricots, while my outdoor shower has provided water to grow the figs.

Using greywater for landscape irrigation is very compelling in areas with limited water supplies,

like the arid western United States. For example, in Arizona, outdoor water use accounts for 40 - 60 % of residential water use. Therefore, Arizona residents could cut their municipal water use in half if they harvested greywater and rainwater to be the sole water source for landscape irrigation.

At a national scale, landscape use comprises 35 - 50% of residential water use, which is still a substantial percentage.

When water suppliers are dealing with water shortages, greywater is a large untapped resource that can be utilized without building new infrastructure or paying for expensive new water supplies.

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There are many benefits of greywater beyond water conservation. Here are a few to consider:

- Conserving energy. It takes substantial energy to pump, treat, and transport water. Water conservation results directly in energy conservation.
 - » 40% of the City of Tucson's energy expenditures are for transportation of water.
 - » 30% of California's natural gas use is in transporting water.
- Reducing wastewater. Greywater that ends up in the sewer needs to be treated before it is returned to the environment. By reducing wastewater your reduce energy and treatment costs.
- Water bill savings. By reusing greywater for irrigation, you can reduce your municipal water use saving money on your water bill.

The Forbidden Waters

While greywater has been utilized as a resource historically by many communities, it is just now gaining recognition as an impor-



Joe Mazzi of Desert Sky Plumbing helps install a greywater system at Esperanza en Escalante, a housing facility for homeless veterans in Tucson, Arizona.

tant green practice and effective conservation technique. States such as Arizona and California, where greywater was once illegal, have passed regulations to permit the installation of residential greywater systems. The City of Tucson, as of June 2010, requires all new residential construction to include greywater stubouts to facilitate greywater installation for new homeowners.

Even while Tucson requires greywater infrastructure, some states continue to declare greywater harvesting as illegal due to fears about health hazards, water rights, and problems with municipal sewer systems. Hopefully successful use of greywater in places like Arizona, California, and Australia (a leading proponent of greywater use), can help reverse this trend.

Best Uses of Greywater

Greywater is best used to irrigate plants that cannot survive on rainwater alone. As a general rule, native plants are adapted to survive on local rainfall and do not need additional irrigation.

Greywater is well suited for fruit trees, ornamental plants, and higher water use native plants (such as riparian species). Greywater may be used for other food-producing plants if the edible part of the plant is elevated and will never come into contact with the greywater (for example, artichokes).

In order for greywater to be an effective water conservation practice, resi-

What is Greywater?

Greywater is water from a laundry machine, kitchen or bathroom sink, shower, or tub*. It can be used without treatment to irrigate most plants if the proper soaps** are used and harsh chemicals avoided.

*This is a common definition used throughout the world; however, sometimes kitchen water is defined as dark greywater or blackwater due to higher amounts of organic materials from food waste. If food scraps are captured in a drain, kitchen greywater that is outlet below soil grade is safe to use.

Each state governments has its own definitions, regulations, and permits regarding greywater – so make sure to research your state's policy before planning your project.

**Proper soaps are biodegradable and don't contain salt, boron, or bleach. You must also discontinue use of water softeners. If harsh chemicals must be used, divert this water to the sewer.

dents should develop a water budget to match the water supply (rainwater and greywater) with the water demand of the plants.

Also, make sure to incorporate conservation techniques into your greywater systems – plant fruit trees that are well-suited for your local climate, use mulch to reduce evaporation, and limit ornamentals and other plants not suited for your local climate.

Greywater can also be used at public facilities and apartment complexes. Often apartment buildings have common laundry rooms – this water could be directed to a common landscape area. Greywater from bathroom sinks could be harvested at schools and businesses to irri-

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Watershed Management Group Updates

We are pleased to share some of our recent program accomplishments including:

- **Partnering with Habitat for Humanity** to install greywater systems in five new homes for low-income families through our Community Demonstration Sites program. See details on pg 9.
- Training 13 participants from the U.S., Mexico, and Canada through our sixth **Water Harvesting Certification** course. Our next course will take place this November. We are also developing a spin-off program called **Watershed Technical Trainings**, which will provide three day trainings in advanced cisterns, advanced greywater, green infrastructure,

WMG Awarded Green Infrastructure Grant

WMG was recently awarded a grant from the Arizona Department of Environmental Quality to expand our Green Streets—Green Neighborhoods program in Tucson as well as bring these trainings to other parts of Arizona including Phoenix. With these funds we will be working with neighborhood groups through educational trainings and implementation of green infrastructure projects. Stay tuned for details on our neighborhood leaders program, a green infrastructure webinar series, and the development of a Green Streets Steward crew.

and small-scale erosion control.

- **Developing green infrastructure designs** compatible with city code through our Green Streets—Green Neighborhoods program. These design templates will make it easier for neighborhoods to integrate stormwater harvesting into traffic circles, medians, chicanes, and right-of-ways in their own neighborhoods. These designs will be available to the public through WMG's website by the end of August.

WMG has exciting events in the works for the fall. We plan to:

- Launch the pilot for our **Conserve to Enhance** program, in which homeowners will track monthly water bill savings after installing water harvesting systems. Participants will donate these savings to a fund dedicated to the restoration of local riparian areas.
- Host a **volunteer and donor appreciation celebration** in September. Look for details about our WMG talent show to take place during this event.
- Provide **affordable rain barrels** to Tucsonans through a partnership with Coca Cola. WMG will sell 200 recycled 55-gallon soda-drums-turned-rain-barrels for \$25 each. Contact our Co-op Coordinator at co-op@watershedmg.org for more details or to reserve a rain barrel.



(Continued from page 2)

gate landscapes.

Before starting any greywater project, check with your state government to find out their regulations and permit requirements regarding greywater use.

Cost of Greywater

Greywater systems can be easy and affordable. Gravity-fed systems are low-tech and low-cost and can be used to irrigate landscapes that are down slope from the water source. Slope can also

be created on flat sites by constructing basins. To learn more about gravity-fed systems, see our mini-workshop on page 8 of this newsletter.

Typical Costs of Greywater:

- Plumbing stubout (done by plumber): \$250+
- Excavation: free to hand dig (\$80+ an hour for backhoe)
- Plumbing parts: \$50-\$300

A greywater system can cost as little as \$300 to install.

- Mulch: free from tree trimming companies, chipped yard waste, or compost.

Greywater systems are an easy, and inexpensive method of reducing municipal water use, supplementing harvested rainwater to irrigate plants, and reducing energy use and water bills. To see just how easy it is to build and maintain a greywater system, check out our profile of co-op member Will Butler on page 10. 💧

Lessons from Australia: Greywater Use in The Outback



Paul James, Guest Writer

Paul James is a leading greywater irrigation consultant and manufacturer in Southeast Australia. He co-founded the United States-based manufacturer Just Water Savers USA, Inc.

Australia suffers from nearly perpetual drought, and population growth has exacerbated drought problems. Urban residents, previously isolated from the effects of drought due to city infrastructure, have learned to conserve as city water supplies diminish and water bills increase exponentially.

For example, Melbourne, with a population of four million, is expected to grow to 5.7 million by 2036. Melbourne's water storages have dropped to as low as 18 percent of total capacity, partly because of drought, but mostly because of huge population growth.

During Australia's drought periods, being green isn't a choice; it's a necessity. Recommended water use is capped at 40 gallons per person per day, including landscape use, versus a 150 gallon-per-capita average consumption rate in the United States.

Given this use restriction, Australians have put much effort into greywater irrigation development and rainwater harvesting. However, residents have found that rainwater harvesting for gardening does not work in the dry, hot summers without very large (10,000+ gallon) cisterns.

Instead, greywater is used extensively in the summer and autumn for garden water supply. Pumping systems are the most efficient method, irrigating the entire property automatically when the washing machine or shower is used.

The general mindset in Australia has changed over the last 15 years. Residents hate wasting water, and seek to make the most of every drop. Water reuse efficiency has become an emerging topic and people have learned how to most effectively irrigate their garden to maximize water infiltration into plant roots.

Politicians have decided to supplement Melbourne's

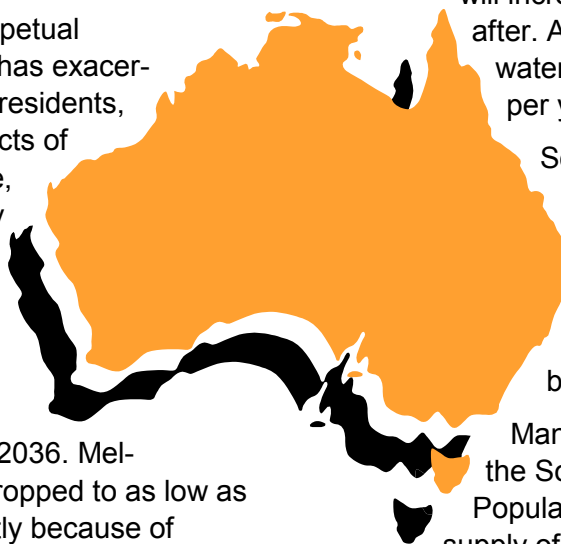
water supply with a 5 billion dollar desalination plant, to be completed by 2012. By this time, the average yearly water bill will have increased from \$600 to over \$2,000, based on current drought household consumption levels. It is suspected the average bill will increase to over \$3,000 per year soon after. A property with an integrated greywater system would save over \$1,000 per year on their water bill.

So while water will be plentiful for the next 20 years (until growth again outstrips supply), the cost of water will continue to drive Melbournians to make the most of every single drop of water they buy.

Many areas of the U.S. (particularly the Southwest) face a similar challenge. Population growth is outstripping the supply of water. For example, Arizona almost doubled its population in the last 30 years, and is expected to do so again in 30 more years. The challenge is nationwide: at least 36 states expect to face water shortages by 2013.

Residents will have to choose between water efficiency or high water bills – or a mixture of both.

Americans can learn from Australia that their level of water consumption is largely a matter of personal choice. It is possible to enjoy a beautiful home and outdoor lifestyle using only a quarter of the water used by the average U.S. resident today. As water prices increase, conservation will not only be a matter of personal choice, but an economic necessity. 💧



Greywater Dollars and Sense:

- Melbourne average yearly water bill: \$600
- Average U.S. yearly water and sanitation bill: \$474 (Environmental Protection Agency).
- Tucson average yearly water bill for a single-family residence: \$277 (City of Tucson Water)

WMG Brings Sustainable Water Practices to Rural Africa

◀ **Jared Buono**, Senior
Hydrology Scientist

Jared Buono and Sowmya Somnath are WMG staff members, who lead WMG's India branch.

This spring, Sowmya Somnath and I traveled to Deou, Burkina Faso, an African village deep in the Sahel desert where people struggle to find enough clean water to survive.

We partnered with the Amanda Marga Universal Relief Team (AMURT), a global network dedicated to international disaster relief. We spent one month training farmers in watershed management and sanitation best practices. This is the story.

April 28. We land in Ouagadougou, Burkina Faso's small but crowded capital city, at the end of April just as the monsoon is arriving. The early rains are meager, mostly adding just dust and humidity to an already oppressive



The water quality from open wells can be very poor in Deou.



The beginning of the monsoon in Deou brings only blinding dust storms and high humidity, with no rain.

hot season. Ouaga is a colorful place where buzzing motorcycles dominate unpaved streets and hawkers balance trays of yellow mangoes on their heads. We spend several days here sourcing materials for the project in Deou. We purchase things we know will be in short supply outside the capital, such as wire for gabions and paints for a mural, before we leave the nascent monsoon season behind and head north ahead of the slowly advancing rains.

May 3. Deou is a world away from the capital city of Ouaga. Just getting there is an adventure as the pavement gives way to a dirt road that eventually gives way to no road at all.

Though Deou is a remote area, it is also a surprisingly busy place. Something of a county seat for the surrounding countryside, its

modest facilities — such as a health clinic and police station — support numerous small, scattered villages. There is no electricity for 75 miles and people get around by camel, donkey cart, and bicycle. Small mud houses clustered at the base of a new cellular tower mark the center of town where once a week thousands of people come for market day.

May 4. There is much for us to do in a short time. The water situation in Deou is dire. Each year about 18 inches of rain fall between June and August — and then begins the wait for the rains to return. By December each year, the landscape has senesced and the rivers and lakes are dry. There are a few hand-pumped wells, but those that

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Sowmya Sonmath gives a community demonstration of a tippy tap used to promote hygiene and sanitation through low-water-use handwashing.

(Continued from page 5)

don't run dry can be far away. The most productive well lies five kilometers from Deou's center. That means a long march and an even longer wait in line at the well. And new hand pumps are not always feasible, as hard granite underlies much of the watershed and the aquifer is limited or nonexistent in many places. Many families dig their own wells by hand each year in the dry river bed. But this is dangerous and the water in the open wells is often muddy and contaminated. In short, it is a daily struggle for people to get enough water. The community, expecting our arrival, is eager to start working.

May 7. We spend our first days in Deou touring the watershed, learning about hygiene and health issues and getting to know the community — which is complex to say the least. There are

several different ethnic groups and numerous diverse languages are spoken. At each community meeting we hold linguistic relay races, with the baton going from English to French to Mosi to Peul through the local AMURT coordinator (he speaks five languages) and then back again. The jokes don't always translate. But it doesn't take us long to work with the community to develop a plan to host watershed trainings and teach people how to recharge ground water. We will also conduct a sanitation campaign to improve water quality and hygiene.

May 10. Many farmers come to our watershed workshops to learn how to construct gabions and loose rock check dams. Rooftop rainwater harvesting isn't

a good option here since the long dry season requires large storage tanks that are cost prohibitive; therefore, we try to capture rain where it falls on the landscape to use the ground as our storage tank. The farmers understand this intuitively and really only need training on where to build structures and how to maintain them. We also spend some time teaching people how to measure contours and build small earthen berms and dams in their millet fields to increase yields. As in Arizona and elsewhere, our workshops are hands-on and practical. Over the course of our month in the community, we hold workshops almost every day and have projects in seven different areas of the watershed. The watershed work is laborious — moving large rocks around under the merciless sun when it is 123 Fahrenheit in the shade is no easy task.

May 15. It becomes clear in talking with the community and the health clinic that diarrhea from

“Le tippy tap! Le tippy tap!”

❖ Cheers from 200 schoolchildren following tippy tap installation.

contaminated water and lack of sanitation is a major illness here, especially for children. We therefore focus our sanitation campaign on the link between clean water, sanitation, and hygiene, especially targeting handwashing

with soap. Several hours each day are spent at the school and occasionally the health clinic. We use skits, songs, posters, and games to engage women and children. Students and teachers help paint a handwashing mural

(Continued on page 7)

This Summer: A Dollar From You = Two For WMG!

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From now until August 31st 2010, one of our loyal donors will match your contribution dollar for dollar! A donation of \$25 will turn into \$50 for WMG!

WMG is excited about this generous matching opportunity that will enable you to double your impact as you support our essential programs.

Donate Online:

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Mail checks to:

Watershed Management Group
P.O. Box 95653
Tucson, AZ 85728

Your contribution is tax deductible.

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at the school and we teach community members how to build low-cost composting pit toilets. We work with AMURT to teach proper water handling and construction of low-tech gadgets like simple sand filters to provide clean drinking water and mini earthen pot “refrigerators” that allow vegetables to stay fresh longer between market days.

May 30. The program culminates in a water fair on our last day. We have stations on handwashing, tippy taps, sand filters, earthen pot coolers and proper water handling. The local theatre troupe performs a play on hygiene, followed by a community discussion. Community members come from far and wide to enjoy a local version of Kool-Aid we provide.

The tippy tap proves to be our most successful inter-

vention. This hands-free, water-conserving, low-tech hand washing system is a huge hit. We build a few around the community, demonstrate them at the school, and set one up at each of our workshops. It isn't long before we see people building them in their own homes. The health clinic staff requests one, and the school has a tippy tap building competition. The one we build for our own use at the AMURT house where they are hosting us receives a lot of attention. This particular tippy tap system is hung from a tree over a basin designed to capture all the water. Although the rains still haven't reached Deou, the tree with the tippy tap below it starts budding long before anything else. It is a most compelling demonstration of sanitation and water conservation.

June 1. Our time in Deou comes to an end. There is so much more work to be done and we will miss our new friends. The farmers want to keep building gabions with us and the school teachers want additional murals in all of the classrooms. But we have achieved a lot. We have shared what we know and helped develop a plan for future activities. Now it is up to the community to continue the work. Watershed work and sanitation campaigns are similar in that they don't always yield immediate results. The rocks that you stack in the gully will hopefully yield water in a nearby well in the future. And changing people's behavior for improved health is a long and complicated process, one that we have just started during our four weeks in Deou.

As we drive out of Deou, the rains still haven't come, but far to the south we see the promise of clouds on the horizon. 💧



Jared Buono, right, leads a community meeting in Deou, Burkina Faso.

Mini-workshop: Choosing a Greywater System



☛ Catlow Shipek, Senior Program Manager

Greywater is an excellent water source for landscape irrigation to reduce potable water use. Selecting and planning the landscape distribution system is critical to make this resource easy and convenient for you to use. The appropriate system selection is based on your site characteristics, intended use, and budget, and your desired level of interaction with the system.



Greywater flow is split using a double ell in the valve box and distributed to each end of the infiltration chamber.

The two main types of greywater distribution systems are gravity-fed systems and tank and pump systems.

Gravity-fed Systems: Gravity-fed systems use sloped distribution pipes to distribute greywater to the landscape. The minimum necessary slope is 2%, or one-quarter inch per linear foot. Gravity systems can be very simple — a single drain pipe discharging directly to one point in the landscape — or it can include flow splitters (such as “double ell” fittings) to provide multiple landscape outlets.

Slope can be created on flat lots by excavating 6 to 18-inch deep basins located at least ten feet away from the home. These infiltration basins will also collect rain runoff to supplement greywater. Slope can also be created by discharging greywater below soil grade into buried infiltration chambers or an upside down five-gallon perforated bucket.

Tank and Pump Systems: Tank and pump systems collect greywater in a holding (or surge) tank. A pump, activated by the rising water level in the tank, pumps the greywater into a distribution line. The greywater in the distribution line is pressurized and does not rely on slope.

Tank and pump systems must be installed by trained personnel and require maintenance on a regular basis due to the higher particulate content of greywater. Tanks should be installed with a self-draining mechanism to drain any remaining greywater to the sewer line to prevent septic conditions in the tank. Never store greywater in a tank for longer than 12—20 hours (depending on the climate).

WMG helps residents install gravity-fed greywater systems through our Co-op program. See www.watershedmg.org/co-op for more information. 💧

Gravy-fed Systems

Pros:

- Less expensive (\$50-300)
- Doesn't require expert installation
- Easy to inspect and maintain
- No electrical connection necessary

Cons:

- Limited distribution based on site slope
- Smaller irrigation coverage
- May have lower irrigation efficiency

Pump and Tank Systems

Pros:

- Pressured system provides distribution flexibility
- Regulated flow rates and volumes
- No slope necessary in yard

Cons:

- More expensive (\$1,000 to \$10,000)
- Must be installed by trained professional
- Requires regular maintenance
- Requires electrical connection
- Greywater can become septic in tank
- Local codes may require a backflow valve



Greywater discharging into a mulched basin.

Affordable Greywater for Low-income Homes

❖ **Catlow Shipek**, *Senior Program Mgr.*



WMG and Tucson Habitat for Humanity (HFH) joined forces this spring to demonstrate low-cost residential greywater systems at five new homes, showing that greywater can be accessible and affordable for everyone.

Tucson HFH strives to be a community leader in implementing green building practices in its home construction. HFH received a Tucson Gray Water Demonstration grant to create a demonstration site at on residence, and partnered with WMG for hands-on training for its volunteers and site supervisors.

The greywater systems installed at the demonstration site comply with the new City of Tucson Residential Gray Water Ordinance (see box below).

HFH took an innovative approach at its greywater demonstration residence by diverting all bathroom sinks, tubs, and laundry water to the landscape with above grade diversion. These diversions, located outside, minimized construction and plumbing costs through use of a 3-way valve that allows residents to direct greywater flow to either the sewer or greywater line. Greywater parts and materials cost only about 500 dollars at this site.

City of Tucson Residential Gray Water Ordinance

- Adopted Sept. 23, 2008; effective June 1, 2010.
- Mandates all new single-family and duplex dwellings include greywater diversion stubouts.
- Intends to make greywater system installation easier without need for expensive plumbing retrofits.
- Encourages water conservation by reducing need for potable water for landscapes by making greywater easily accessible if the homeowner desires.



Habitat for Humanity and WMG crew pose before starting work to install basins and greywater systems at 4 new homes.

In contrast, conventional new home construction in Tucson locates greywater stubouts well below soil grade, necessitating more expensive tank and pump systems, along with additional costs for special permits and backflow valves. These tank and pump systems normally cost from \$1,000 to \$10,000.

Along with the greywater demonstration residence, WMG led workshops with Habitat volunteers installing laundry greywater systems and rainwater harvesting earthworks at four new homes.

HFH Project Supervisor Danny Knee said, "We get four thousand people through our sites each year. These projects will raise community consciousness" of greywater systems and their affordability.

Danny said that HFH will continue to install greywater and rainwater harvesting systems in all its new construction. "Compared to the average landscape package," he said, "it barely costs any more."

Please contact [Tucson Habitat for Humanity](#) to learn more about how they incorporate rainwater and greywater into their site designs and construction or to arrange a tour of their greywater demonstration residence. Click here to see an [informational video](#) about the greywater system at the Habitat site. 💧

Will Butler: Over 70 workshop hours and still going

❖ Rhiwena Slack, Co-op Coordinator

Will Butler is an outdoor enthusiast who moved from Kentucky to “warm and faraway” Tucson ten years ago and stayed here for the mountains and outdoor activities.

He spends his spare time hiking and backpacking with his dogs, and consequently has little time to devote to plant care. When he moved into his centrally located house three years ago, Will was determined to walk the walk with regard to water use and never use virgin city water on his yard.

However, he recognized that his bare yard would benefit from trees to give shade and provide food and wildlife habitat. Will took part in a workshop to learn about cistern installation so that he could go home and install one of his own. He found that he got so much pleasure from “digging in the dirt with people that are driven to better the community” that he joined the WMG Co-op and has volunteered over 70 hours with WMG over the past year and a half.

Last summer, Will hosted a Co-op greywater workshop to run water from his laundry and bathroom sink directly into a mulched basin along the west side of his house. Valencia orange and tan-

gelo trees in the basin will mature to provide fruit, as well as shade, which Will expects to reduce his home’s cooling needs. Even though they are not native to Arizona, the trees require little care.

“I haven’t had to do anything except occasionally pull weeds from the basin and cover the trees for frosts,” Will said. Since they are irrigated directly by a pipe, Will doesn’t have to worry about watering his trees. The trees have survived

their first year and are now getting established. Will hopes they will start to take off in the next year, and begin to bear fruit soon.

Like the trees, the basin and greywater plumbing require scant maintenance. To prevent a build-up of salts, the basin is occasionally

flushed by rainwater runoff or stored roof runoff held in a 50-gallon barrel. The only lifestyle change Will has made is buying environmentally-safe laundry detergent. He estimates that the heavily mulched, rock-lined basin will hold about 120 gallons of water before overflowing into his back yard, where it would water the native grasses that he planted to keep the dust down from energetic dog play. Will also intends to divert his bathing water into the greywater system.

Will hopes to soon host a cistern workshop, which will allow him to expand his landscaping. He has enough hours for more than two Co-op cistern workshops but, continues to volunteer at workshops for “the joy of working with the other co-op members.” Will said, “I don’t think that I have ever been exposed to another organization that has been so filled with genuinely nice people passionate about their work.” 💧

“I don’t think I have ever been exposed to another organization so filled with genuinely nice people passionate about their work.”



Will Butler hosts a Co-op greywater workshop in his yard.

Using Grassroots Efforts to Change Greywater Policy



• **Laura Allen, Guest Writer**

Laura Allen is a Bay Area educator and greywater activist. She has a BA from UC Berkeley in Environmental Science and works with the Greywater Alliance.

Reusing greywater for outdoor irrigation from sources such as washing machines and showers is a simple and effective strategy for reducing water consumption. Sadly, most of this water is lost down the drain to sewage treatment plants, where vast amounts of money and resources are used to treat and dispose of it.

Even though many states face water supply shortages, droughts, and rising water costs, greywater reuse is rarely promoted or encouraged by cities and water agencies. To date, only a handful of water agencies and cities across the country offer rebates, incentives, or education about greywater - but that number is growing.

Historically, greywater reuse has been outlawed in the United States because it was considered sewage. In 1992, California was the first state to write a code specifically addressing greywater, though that code was so restrictive that there was little compliance. Only in recent years are states revamping regulations to permit the legal reuse of greywater.

Arizona became a pioneer in 2001 when it introduced the first policy making greywater reuse both legal and feasible. California followed suit in 2009. Even as states legalize greywater, implementation has been limited and so far actual water conservation lags far behind its potential.

The arid Southwest of Arizona, Texas and New Mexico, as well as California and Wyoming, now have regulations that make it easy for people to legally use residential greywater. Yet in the decades prior to these new regulations, most greywater reuse was illegal under the restrictive or non-existent codes. Because of this, the grassroots greywater community, with the wealth of experience and information they had attained through promoting greywater prior to its legal use, found themselves at odds with the regulatory agencies, who were unable to

promote greywater reuse until it was legal.

To address this tension, the Greywater Alliance of the San Francisco Bay Area aims to make reuse of greywater a critical and integral part of water conservation efforts. After California's plumbing code was revised and improved last year to include simple legal reuse options, the Greywater Alliance began to bridge the information gap between installers, water agencies, and permitting agencies.

The Greywater Alliance began a series of roundtable discussions and presentations to promote open dialogue between residents, building professionals, designers, city inspectors and planners, policy makers, water district staff, and greywater advocates.

The first discussion focused on the role of water agencies in promoting greywater reuse. The larger Bay Area is home to dozens of water agencies, several of which have designed rebate programs, although the majority have not. Representatives from four districts spoke about the development and logistics of their incentive programs.

Throughout this process, residents, city inspectors, and greywater installers discussed problems and solutions for successful incentive programs. At each event, a local installer discussed a system they have installed to show current best practices and to demystify greywater systems and how they work.

In the short year after California changed its code in 2009, and the six months of hosting greywater round-table discussions, several more water districts have established rebates. Greywater regulators are seeking out presentations and information, and some cities are working on streamlining the permit process.

The wide-scale greywater reuse and the cultural shift needed to conserve and protect our water resources will not happen overnight, but it is happening. It is time to stop looking for new sources of water in new dams and desalinization plants, and to instead implement the simple low-tech solutions available to every household. 💧

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Originate Natural Building Materials | Sage Landscape Architecture & Environmental, Inc

Thanks to Our Many Individual Donors

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Alan Ziblat

(Individuals listed have donated between
May 13th—July 23rd)

Special Thanks

- Tamma Murphy for donated professional services of video taping and editing.
- Ron and Marti Kuykendall for a desktop computer donation.
- Drama Club for throwing a benefit concert for WMG's School Yard program.
- KXCI Tucson for donating public service announcements for WMG's benefit concert.
- The Hut for hosting WMG's benefit concert.

Watershed Moment is a quarterly newsletter written by WMG staff and guest contributors, with graphic layout by Lindsay Ignatowski and final editing by Lisa Shipek. If you are interested in submitting to The Watershed Moment, please contact Lindsay at lindsay@watershedmg.org or at 520-396-3266.

The mission of Watershed Management Group is to develop community-based solutions to ensure the long-term prosperity of people and health of the environment. We provide people with the knowledge, skills, and resources for sustainable livelihoods.