



WMG Launches Water Harvesting Certification Program for Summer 2009

WMG is now accepting applications for the *WMG Water Harvesting Certification*, a hands-on training program in Tucson, AZ, to instruct educators, professionals, and community organizers in the design and construction of water harvesting systems. The goal of the program is to provide the highest quality training in the nation to effectively transfer water harvesting skills and knowledge to new communities.



Brad Lancaster, one of WMG's certification instructors, teaches how to install a branched-drain greywater system.

This year marks our second year of the program. We are offering the program in a condensed time frame to enable participants from many different fields and regions to participate. Last year's course was targeted to

training water harvesting instructors,

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UA Engineers Without Borders Chapter Looks Forward to West African Project

By **Trahern Jones**, EWB-UA Former Chapter President

Between classes and homework assignments, engineering students at the University of Arizona (UA) in Tucson, AZ are learning that sometimes life's most important lessons can't be found in tables or triple integrals. They're found in the joy of helping others, understanding distant cultures, and developing creative and lasting solutions to real-world problems. These lessons are being learned thanks to one campus organization: UA Engineers Without Borders (EWB-UA), a student chapter of the internationally-

recognized U.S. 501(c)(3) nonprofit organization, EWB-USA.

This May, the EWB-UA chapter will be completing a three-year project in Mafi Zongo, Ghana, which includes the design and implementation of a large-scale filtration system for a water distribution network in a rural setting. When the village spigots are turned on and the system put into use, over ten thousand villagers in thirty different communities will taste clean, safe water from the tap for the first time in their lives. Given that waterborne diseases are one of the primary

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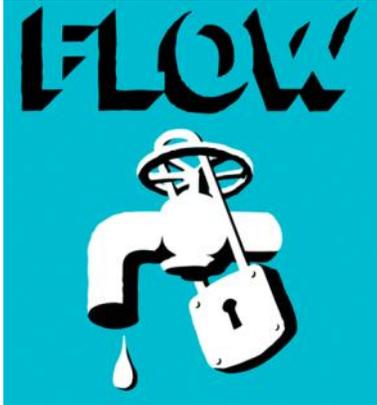
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WMG Updates

WMG Brings Documentary “Flow” to Tucson Community

WMG partnered with Tucson’s Loft Cinema to offer a special showing of Flow in early March. Flow is director Irena Salina's award winning documentary investigation into what experts label the most important political and environmental issue of the 21st Century- The World Water Crisis. Salina builds a case against the growing privatization of the world’s dwindling fresh water supply with an unflinching focus on politics, pollution, human rights, and the emergence of a domineering world water cartel. FLOW was included at the Sundance Film Festival as an "Official Selection" and won the "Best Documentary Award" at the United Nations Association Film Festival. For additional movie information please see the website: <http://www.flowthefilm.com>.



val. For additional movie information please see the website: <http://www.flowthefilm.com>.

The community interest in Flow was tremendous. We had a sold out show of 500 people, and 100 people had to be turned away from the event! In addition to the film, presentations were made by WMG, Tucson water harvesting guru Brad Lancaster, and the UA chapter of Engineers Without Borders. Each presented ways Tucson residents could take active part in addressing the world water crisis at home and abroad.

WMG Staff Serves as Mentor for Engineers Without Borders project in Mali, Africa

WMG staff member, Catlow Shipek, has been assisting the University of Arizona chapter of the national Engineers Without Borders organization with a water project in Mali. Catlow is serving as a professional mentor for a group of engineering students tasked with providing a local, potable source of drinking water to families in a rural village in Mali. He will be traveling with a biosystems engineering student to Mali this May for an assessment trip. Catlow is providing expertise in planning and installing rainwater catchment systems and resource management site assessment. More information on the UA chapter of EWB can be found in an article on the Page 1 of this newsletter.

WMG Raises Money to Offer Water Conservation Programs to Low-Income Communities

On March 28th, WMG raised \$5,000 through the Hope-filled Harvest fundraiser. The event took place at Esperanza en Escalante, a transitional housing facility for homeless veterans. WMG installed a rainwater garden and laundry-fed greywater system at Esperanza last spring and had the opportunity to showcase the work to the 150 people who attended the event. The event was a memorable evening including entertainment by Petey Mesquity and Way Out West, along with a barbecue dinner made from locally-grown produce and meat.

Thanks to all the people and businesses who supported the event!

WMG Receives Grant to Work with Boys and Girls Club

A recent grant from the University of Arizona Cooperative Extension will enable WMG to implement a gar-



Way Out West performs at WMG’s Hope-filled Harvest, to help raise funds for water harvesting projects for low-income communities.

dening and water conservation project with the Boys and Girls Club at one of their clubhouses. The Boys and Girls Club requested WMG’s help to teach youth about gardening and sustainability practices through a series of hands-on classes and implementation of a garden. The gardening project will also teach youth about

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Notes from the Field: Sanitation in India

Below is a commentary written by Sowmya Somnath during a year of volunteer service with Indicorps (www.indicorps.org) in RH3, a Bengali refugee camp in Sindhaur, India. Her service project involved partnering with a local NGO to increase sanitation and hygiene awareness and infrastructure. Sowmya, a structural engineer, served as a board member for WMG for several years and is currently assisting WMG develop their international programs. She and her husband, Jared Buono, plan on working in India on water and sanitation issues.

“Fancy Shirt and Shiny Pants”, October 20, 2008

The carpenter is drunk today. This means that yet again, he will spend his day not making doors. Just to be clear, we have paid him for the sole task of making doors. The doors, it turns out, are probably one of the most important parts of the toilets we are building. Without a door, the toilet will not be used.

I try to explain this to him; “It’s like wearing a fancy shirt but not having any pants on.” The comment is lost on him, and I reconcile myself to waiting yet another day to get the doors.

It’s another day of surprises at Rehabilitation Colony #3, a village consisting of around 4500 Bengali refugees. I’m not sure what I expected when I first started this sanitation project, but everyday brings a set of issues that either makes me throw my hands up in frustration or makes my heart sing (and often both at the same time).



Adhivas Mandal, a villager from RH3, stands outside his newly constructed double pit composting toilet.



RH3 youth during weekly village trash collection efforts.

My days are long and varied. One day I’ll be working on the construction of toilets, and the next I’ll be working with school children to put on a sanitation play. I hold discussions with women self-help groups on sanitation issues, work with young men to pick up garbage on the roads, argue with masons, get village elders to dig vermi-composting pits, teach kids sanitation songs, and fish pet turtles out of toilet water tanks.

The challenges here are multifaceted. For example, I’m trying to learn three languages at once so that I can communicate with my Bengali village, my partner NGO and the local community....this means that I master none of them. The kids still giggle helplessly at my pidgin mixture of Hindi, Kannada and Bengali.

Other challenges revolve around understanding development as it applies to a displaced community. The

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Water Harvesting Cistern Design Contest

What would the ideal rainwater cistern look like in your backyard? A dramatic sculpture? A complement to our desert flora? A sound instrument played by the rain? Watershed Management Group aims to inspire and involve the community with their artistic cistern design competition starting June 1st and running through August. The winning vision will be announced in September and constructed by WMG in the fall. The top ten designs will be featured for public viewing on our website to promote creative designs.

As part of our educational mission, WMG offers workshops on installing

steel culvert, plastic, and ferrocement cisterns. These workshops illustrate good cistern designs that are sturdy, lightfast, mosquito-proof, easy to maintain, and utilize local materials. But it doesn't have to be boring!

In this first friendly competition, WMG asks participants to tap their artistic side and submit their best ideas for aesthetically pleasing rainwater cisterns. Designs will be judged by local artists and cistern installers. Submit a drawing and brief description for a cistern that can hold 800 gallons and be constructed for less than \$1200, and the

group could build you a prototype this fall.

WMG knows that within the hearts of its volunteers and communities lurks the innovative spirit and the passion that will transform a good design into a great one. The competition will be open to all and have no entry cost. Artists and the art-challenged alike are encouraged to participate in this exercise of group brainstorming.

The detailed guidelines will be posted online on June 1st, but you can start revving your creativity now.

Our Sincere Thanks

A Special Thanks To:

- Jill Nunes for organizing the Flow documentary screening at the Loft
- Emmy Creigh and Way Out West for donating their time and talent to perform at our Hope-filled Harvest Fundraiser
- Steven Gendell, David Shipek, and Melissa DeFoor for donating their services to create a wonderful dinner for our Hope-filled Harvest Fundraiser
- TerraSystems Southwest for their creation and donation of three specialized watershed maps of Tucson
- Tucson Plant Materials Center for donations of plants for the bioretention basins for the Rincon Heights Water Quality Project
- Food Conspiracy Co-op for grant to support edible food garden through our Co-op program

Individual Donations:

River Basin Level

John Matthew Carlton
Donna M. Lines

Flowing River Level:

Kim Afinowich
Emmy Creigh
Tobias M. Freebourn
Mark Grosvenor
Dalton Hodges Jr.
Virginia Rich
Lisa and Catlow Shipek
Ed Thompson
Keith Zabik

Silver Raindrop Level:

Kathleen Bangs
Ross Bryant
Gina and John Chorover
Debra Cochran
Beverly Peterson Dulaney
Kris La Fleur
Jennifer Glass
Ilene Grossman
Juergen Haber
Joan Hart Leigh
Chuck Martin
Susan McClaran
Kit O'Connor
Wil Schaefer
Gay Townsend
Rachel VanDaalwyk

Pricilla Walker

Dewdrop Level:

Patrick Armstrong
Ian Shea Burns
Evan Canfield
Monica St. Clare
Chandra Holifield-Collins
Rebecca Jones
Madeline Kiser
Joan Leigh
Lainie Levick
Victoria Ligon
Monica Meyer
Omar Ore-Giron
Nancy and Tidhar Ozeri
Tom and Sue Palliser
Lincoln Perino
Anastasia Rabin
Katherine Rorschach
William Rosc
Phyllis A. Russell
John Rutledge
Natanya Siegel
Joe Silins
Adam & Stephanie Springer
Joan Warfield
Richard Woodruff
Alan Ziblat

WMG Water Harvesting Certification (continued)

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and included a practicum in leading workshops with community members. This year the practicum is strictly optional; participants may request to add the practicum to their training at a later date.

The WMG Certification program will offer a Level 1 and Level 2 training course. The techniques taught will focus on design for retrofitting urban areas, and participants will be trained in planning, installation, and maintenance. The courses have been condensed into a 9 day and 8 day program in July and August of 2009.

The WMG Certification program is the only of its kind in the U.S. The program is designed and administered by WMG staff with assistance from local Tucson instructors and an advisory board made up of licensed contractors, consultants, and designers who create water harvesting systems.

Training Schedule

Level 1: July 18th – July 26th 2009

Level 2: August 8th – August 15th 2009

Program Cost

The Level 1 training program has an estimated value of \$1,200 and is being offered at a reduced rate of \$500 through a grant from the Center for Watershed Protection. The Level 2 training program has an estimated value of \$1,200 and is being offered at a reduced rate of \$450. WMG is also offering several program subsidies to applicants on a per need basis for each program.

Training Curriculum

Level 1:

1. Integrated design
2. Passive rainwater harvesting earthworks
3. Greywater harvesting (laundry)
4. Roof-top rainwater collection & storage (steel cistern)
5. Sustainable landscaping

Level 2:



WMG apprentice Blue Baldwin works the air bubbles out of a freshly poured concrete pad for a steel culvert cistern.

1. Integrated design
2. Streetscape stormwater harvesting
3. Advanced cistern design (ferrocement)
4. Blackwater harvesting (kitchen sink)
5. Small-scale erosion control features

Applying to Program

To participate in the program, please submit an application and one page resume. The application and resume are due by May 18th, 2009. Ten people will be selected to participate in each of the programs, and participants will be notified by June 1st, 2009.

Applications are available on WMG's homepage at www.watershedmg.org.

If you have any questions about the training program or application process, please contact Lisa Shipek by email at lisa@watershedmg.org or by phone at 520-396-3266.

UA Engineers Without Borders (continued)

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health concerns in this area, this project may literally save lives within the near future.

These ambitious EWB-UA students have already committed themselves to the next project: to travel to a small, rural village named Mandoli, in the West African Sahel of Mali, and assist with the construction of a reliable and clean water supply system. In Mandoli, the villagers' nearest water source is a small spring at the base of the Bandiagara Escarpment, a natural crag rising hundreds of meters in places. Women and children must walk a rocky, steep path along the escarpment to collect precious water from the natural spring at the base, and they repeat this task every single day from June to January, at which point the spring water dries up. Everyone in the region, from villagers to Peace Corps volunteers, knows there must be a better way; it is simply a matter of engineering.

Mandoli does not receive large amounts of rain, but does see sufficient amounts of precipitation for a rainwater catchment project. A likely solution will entail building rainwater storage containers, or cisterns, that capture roof runoff from individual households. Choosing a cistern design will pose an interesting challenge. Mandoli is a rural village that depends on subsistence agriculture; therefore, building materials may be difficult to attain. Interestingly, the men of the village are very skilled at rock masonry, and have previously built cisterns to serve their fields, which may prove invaluable to the project's final shape.

The students of EWB-UA have dedicated themselves to finding the solution and are working closely with profes-

sional mentors in Tucson. Catlow Shipek, with Watershed Management Group, is providing expertise on resource management and rainwater harvesting, and Ryan Sinclair, with the University of Arizona Environmental Research Laboratory, is providing expertise on water quality and filtration systems.



Child at stand pipe in Mafi Zongo. with the University of Arizona Environmental Research Laboratory, is providing expertise on water quality and filtration systems.

Over the last year, EWB-UA students have developed fundraisers, written grant proposals, and planned the first site assessment trip. One student and one mentor will be travelling to Mali for 2 weeks in May. After collecting necessary data about the local terrain, rainfall, ecosystem, and local cultural, these volunteers will return to the U.S. to begin drafting the first outlines of an engineering solution to Mandoli's water shortage problems. They will also begin fundraising anew for the project's implementation, hopefully returning to Mali within the year.

Dozens of responsible, conscientious engineering students at the UA have been inspired by EWB-UA's passion and inimitable hands-on experiences. EWB-UA is always looking for help and support for their projects. For more information or to make a donation, please visit our website at www.ewb-ua.org or contact current chapter president Terra Michaels (terra@email.arizona.edu).



EWB-UA students testing water quality in Mafi Zongo, Ghana

Engineers Without Borders

Engineers Without Borders - USA (EWB-USA) is a non-profit humanitarian organization established to partner with developing communities worldwide in order to improve their quality of life. This partnership involves the implementation of sustainable engineering projects and developing responsible leadership among engineering students and engineering professionals.

The University of Arizona chapter of Engineers Without Borders (EWB-UA) was formed in 2005, and the membership is made up of engineering students from the UA College of Engineering including chemical, civil, mining, mechanical, engineering management and electrical engineering students. Membership also includes professional mentors—local professionals from the community who share their expertise with the students.

WMG Updates (continued)

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healthy eating by introducing fruits and vegetables into their after school snack diet.

10 Low-Income Families Receive \$1,000 subsidies for WMG's Co-op Program

This spring we offered ten \$1,000 scholarships for low-income families to have Co-op workshops at their home for "back-yard makeovers." The workshops have been led by pairs of WMG apprentices, who have done a great job stepping right into the role of planning and teaching workshops. Families who receive the grant are volunteering their time at other families' workshops to give back to the Co-op program.

Grassroots Stormwater Management Project Attracts University as Partner and Documentary Interest

This winter and spring, WMG continued its water quality education and improvement efforts in Tucson's Rincon Heights neighborhood (funded by a grant from the Arizona Department of Environmental Quality). Through a series of public workshops, WMG and neighborhood volunteers have now in-



Catlow Shipek explains the greywater system at WMG's Hope-Filled Harvest fundraiser.

stalled eight sites that demonstrate Best Management Practices (BMPs) for stormwater quality. The projects range from directing stormwater from an eroding driveway into a streetside planting basin, to installing bioretention basins that capture stormwater from University of Arizona parking lots. Thanks in part to the efforts of WMG staff, the University agreed to install similar BMPs on six more of its own properties in the neighborhood, helping to mitigate the significant volume of runoff created by its parking lots and buildings. The grassroots efforts of the Rincon Heights neighbors and WMG's educational program have caught media attention as well. The project is slated for inclusion in a water documentary, called Water Pressures, and filming will take place next fall.

Special Thanks to the Hope-Filled Harvest Sponsors!

Cistern Level:

- A Perfect Occasion Gourmet Catering Service
- Southern Arizona Rain Gutters

Greywater Level:

- Desert Sky Home Repair
- Oasis Water Harvesting
- 17th Street Market

Earthworks Level:

- 50 Mile Farms
- Alphagraphics

- Canyon Pondsapes
- City of Tucson, Department of Transportation
- Geo Innovation
- Lil' John's Excavating
- Moia Group
- Rincon Heights Neighborhood Association
- The Brown Law Group
- Tucson Community Supported Agriculture
- University of Arizona, Office of Community Relations
- Ward II Council Office
- Wet Desert Water Harvesting

Sanitation in India (continued)

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Bengalis came here as refugees in the early seventies. The Indian government gave each family 5 acres of farm land, cattle and housing materials. They are accustomed to a government that provides free services and asks for nothing in return. Many villagers believe the government should be responsible for things like providing toilets and cleaning out the drainage channel that the villagers have filled with garbage.

Am I really making change when I get the local government to offer funding for garbage bins in the village? Is it the 'right' kind of change? I am helping the village deal with their trash issues on one hand but reinforcing the idea that solutions and resources come not from within the village, but from external sources, like the government or NGOs. Is today's word of the day "empowerment" or is it "solid waste management"? How do I balance the goal of achieving results with the goal of ensuring a capacity-building process?

Sometimes these questions are answered by the community itself. This week proved that this project is growing and shifting in ways that I



Sowmya and girls from the local school show off their gloves after trash collection efforts in the village.

could not conceive 8 months ago. Sameer and Sudhanya, two strong willed community members, went to all the local shops in the village and reiterated the importance of garbage bins. The shop keepers, most of whom had watched trash drives cleaning the road in front of their shops rather sheepishly, handed over 100 Rupees each to install new garbage bins. RH #3 now has 6 new community initiated, funded and maintained garbage bins. I find myself giddy with excitement at this locally generated solution. Perhaps there can be more than one word-of-the-day at a time.

In the meantime, we start up on our next phase of toilet construction with doors made by our new carpenter (someone whose extra curricular activities don't affect the door production). I stand by one of the new toilets with its shiny door reflecting the mid day sun and grin like a fool; the door is the perfect set of "pants" to a fancy "shirt" toilet.



Girls at the local school practice a sanitation play. The young girl in the middle is playing the part of a water pump.

Support Watershed Management Group Today!

Watershed Management Group is a 501(c)3 not-for profit organization based in Tucson, Arizona. All donations are tax deductible.

Suggested Individual Contribution Levels:

- ◇ Dewdrop: \$15
- ◇ Silver Raindrop: \$50
- ◇ Flowing River: \$100
- ◇ River Basin: \$500
- ◇ International Watershed: \$1,000

Suggested Business Contribution Levels:

- ◇ Rillito River: \$500
- ◇ Santa Cruz River: \$1,000
- ◇ Gila River: \$5,000
- ◇ Colorado River: \$10,000

WMG Wish List

- ◇ Storage space for tools in central Tucson
- ◇ Garden tools (shovels, pick axes, hand trowels, etc.)
- ◇ Locking file cabinet

You may also make your tax deductible donation online at www.watershedmg.org on our Contributions page.



Water Harvesting Co-op members work hard to create rainwater harvesting basins for a vegetable garden

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

The mission of Watershed Management Group is to improve rural and urban livelihoods by integrating community development and conservation. We provide local residents and community groups with the knowledge and skills necessary to sustainably manage their natural resources.