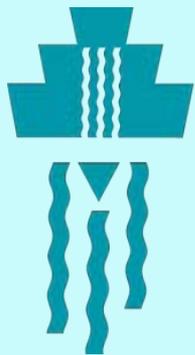


# Securing Water for the Environment



Water Resources  
Research Center



Joanna B. Nadeau  
Dr. Sharon B. Megdal  
Candice Rupprecht

# Presentation Overview

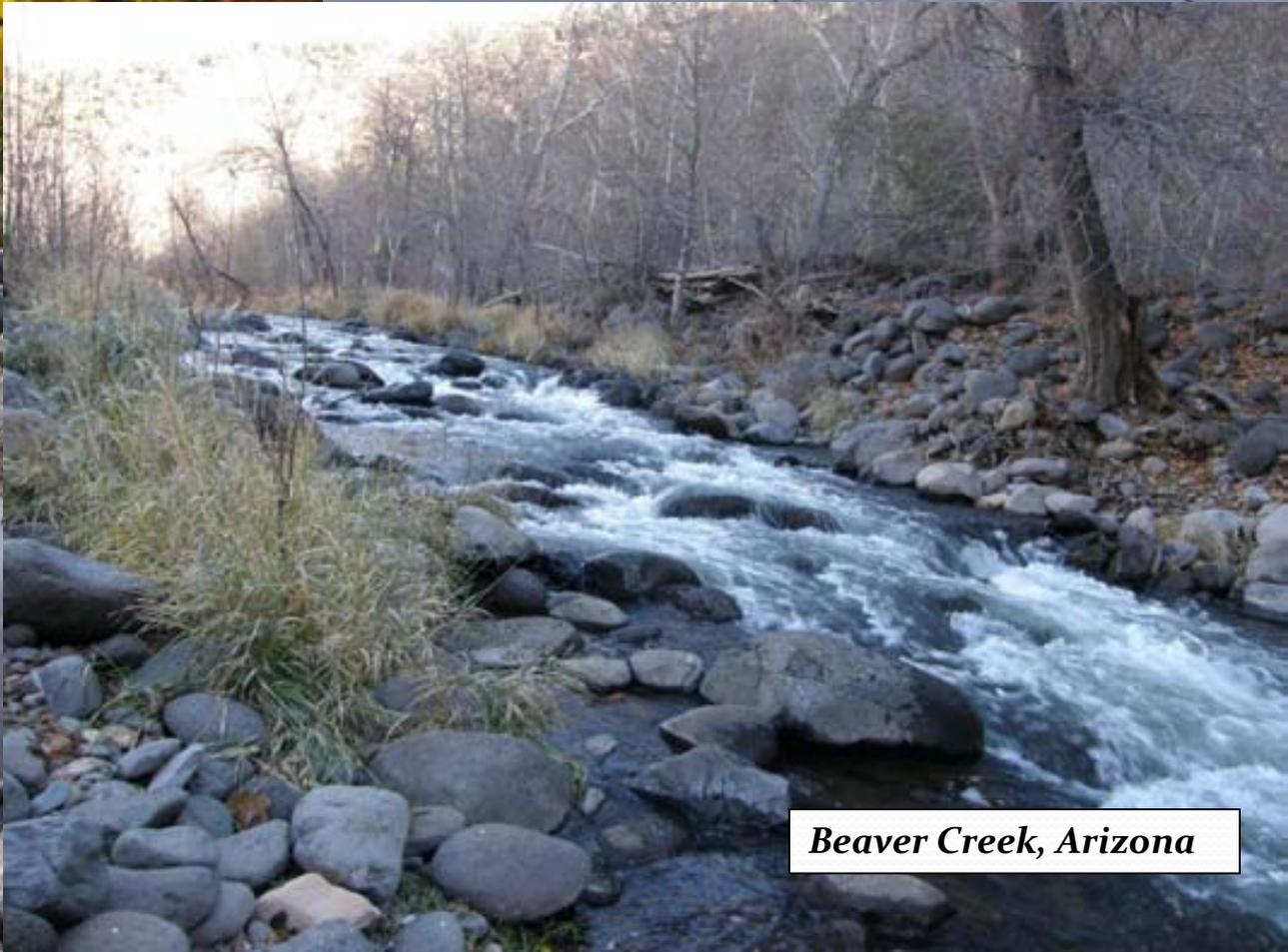
- Background and Purpose
- The Conserve to Enhance Mechanism
- Other Voluntary Mechanisms
- Piloting the Concept: The Tucson Story
- Evaluating the Concept
- Piloting the Concept: Our General Approach

A wide, calm river flowing through a landscape with sparse vegetation and trees. The water is still, reflecting the sky and the surrounding environment. Bare tree branches are visible in the foreground, framing the view.

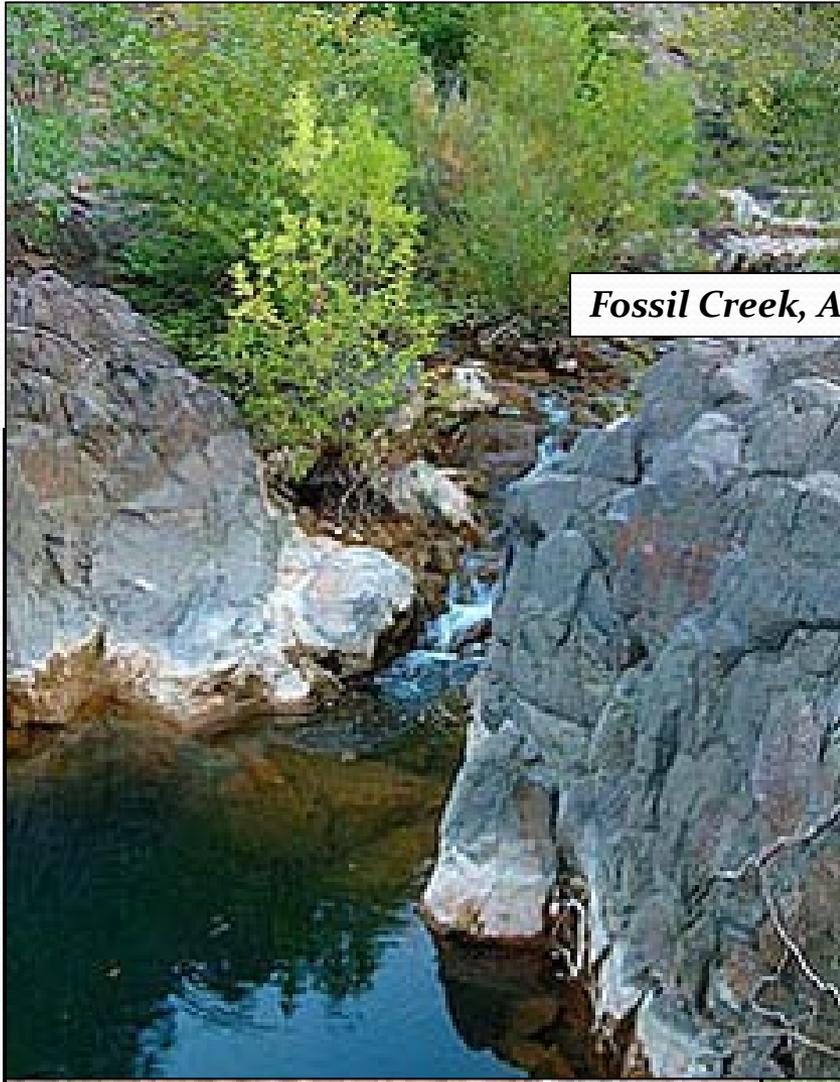
*Salt River, Arizona*

A close-up view of a stream flowing over a rocky bed. The water is clear and shallow, with small ripples. The surrounding vegetation is lush and green, with some yellow leaves in the foreground.

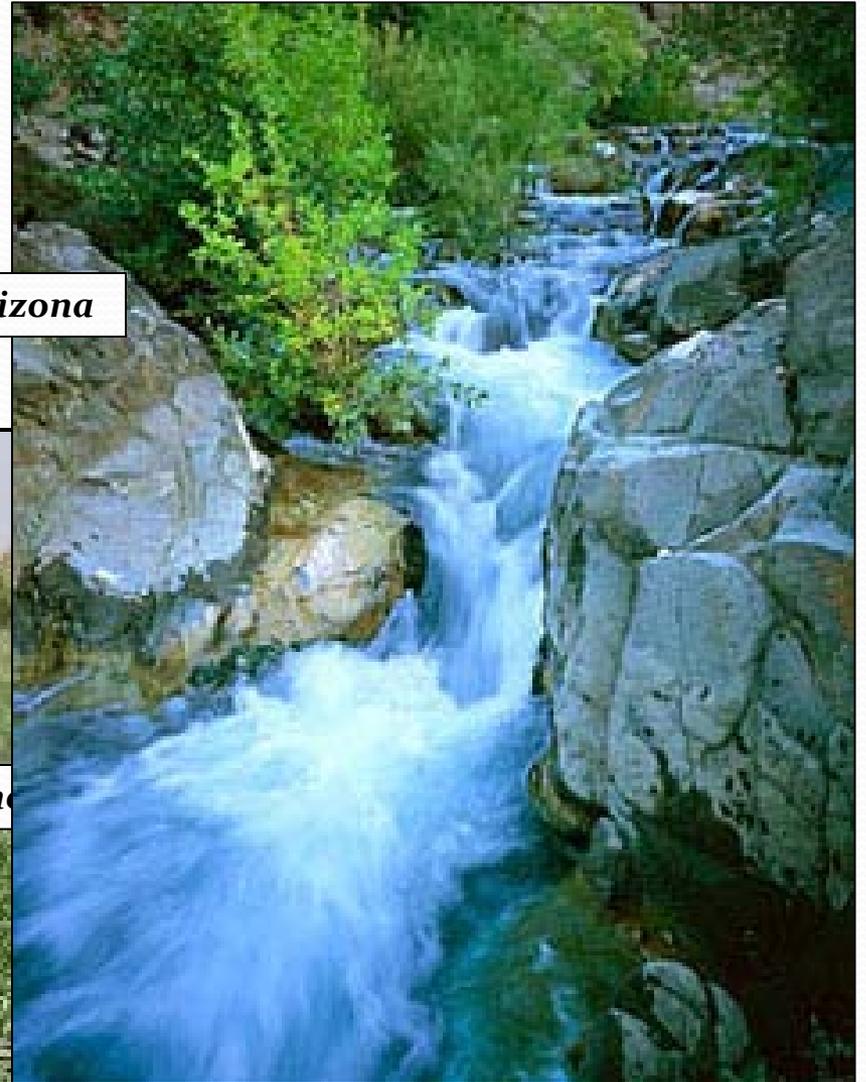
*Sabino Creek, Arizona*

A fast-flowing stream with white water rapids, cascading over a rocky bed. The water is turbulent and white with foam. The surrounding landscape is rocky and sparsely vegetated, with some trees in the background.

*Beaver Creek, Arizona*



*Fossil Creek, Arizona*



h

# Project Background

- Environment is the “forgotten” sector in Arizona water management and planning

*(Megdal, Nadeau, and Tom, 2011)*

- Environmental enhancement projects need funds to secure water supplies

*(Megdal et al., 2006 “Projects to Enhance Arizona’s Environment”; Gerlak, et al., Water Policy, 2009; Megdal et al., 2009 “Water, People, and the Future”)*

- Public interest in preserving and enhancing riparian areas

*(Katz, 2006)*



Oak Creek, Arizona (Credit: AZ State Parks)

# Conserve to Enhance

Water saved through  
water conservation

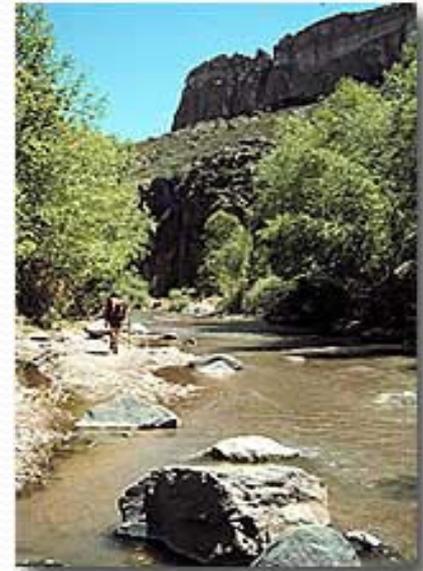


Water delivered to riparian  
enhancement sites



# Program Objectives

- Connect water conservation to environmental concerns  
*(Schwarz and Megdal, 2008; Megdal and Bate, 2009)*
- Provide water to environmental enhancement projects
- Link individual conservation to environmental benefits
- Create a simple accounting mechanism
- Create a reliable funding source
- Raise awareness about water conservation and river restoration



*Aravaipa Canyon, Arizona*



*Platte River, Colorado*

# Conserve to Enhance Mechanism (#1)

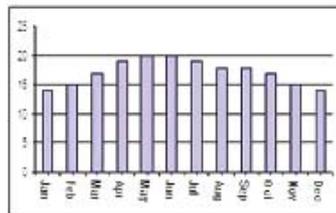
- Voluntary water use reductions lead to savings
- Money saved is donated to the program
- Donations are used to pay for water for environmental enhancement

CITY ITEMIZED WATER VOLUME CHARGES BILL PERIOD = 31 DAYS METER NUMBER 0600XXXX

WATER USAGE	IN GALLONS	IN CCFS
THIS MONTH:	9724	13
LAST MONTH:	10472	14
THIS MO. LAST YR.	10472	14

CURRENT READING

MONTHLY SERV CHRG	5.35
VOL \$ 1.10 * 13.00	14.30
CAP CHARGE	.28
TOTAL	19.93



Additional information

## WATER CONSERVATION BANKING

JANUARY BASELINE	
14 @ \$1.10 + SERV/CAP CHARGES	21.03
AMOUNT DUE	21.03
JAN. WCB CONTRIBUTION	1.10

**1 CCF CONSERVED**

**Conservation to Date: 1 CCF**

# Donations Can Go Toward...

- Purchase of water
  - Reclaimed water/Effluent
  - Groundwater
- Water leases
- Secure instream flows
- Acquire easements and retire pumping
- Recharge groundwater
- Other



# How to Encourage Participation

- Tangible connection to environmental concerns
- Subsidize water conservation
- Link with existing water conservation programs
- Match donations



# A Simpler Mechanism (#2)

- Check-box donation programs
  - Exist in three communities
  - Do not connect donations to conservation actions
  - Demonstrate support for environmental water supply
  - May be useful for first phase of project
  - Limited billing system modifications



# A Simpler Mechanism



## ENROLLMENT FORM

YES! I would like to 'GIVE TO THE FLOW' through the Blue Water program and help put water back into the Deschutes River. I agree to sign up for the selected level and pay the extra charge on my monthly water bill. Please return the completed form with your Avion Water bill.

NAME \_\_\_\_\_

AVION WATER ACCOUNT NUMBER \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

DAYTIME PHONE/E-MAIL \_\_\_\_\_

You can discontinue at any time by contacting Avion Water. Information not sold or shared.

## BLUEWATER LEVELS

PLEASE CHOOSE ONE OF THESE OPTIONS

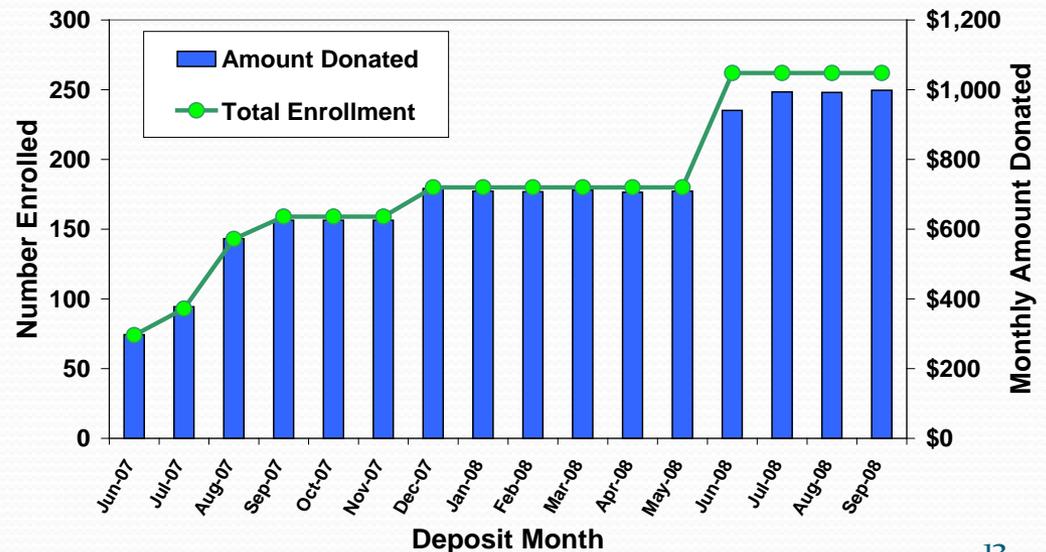
- |                          |               |        |
|--------------------------|---------------|--------|
| <input type="checkbox"/> | River Otter   | \$6.40 |
| <input type="checkbox"/> | Blue Heron    | \$4.80 |
| <input type="checkbox"/> | Rainbow Trout | \$3.20 |
| <input type="checkbox"/> | Spotted Frog  | \$1.60 |

Thank you for your contribution to the Deschutes River! 100 percent of your donation goes to the Deschutes River Conservancy, a local 501(c)3 non-profit. Your donation is tax deductible. Save your bill stub as receipt.



# Lessons from Checkbox Programs

- Partners are needed!
  - Initiated through partnerships between cities/water utilities and local environmental organizations.
- Water can be hard to find!
  - Limited availability of water for lease in some basins.
- Demonstrate results!
  - On website
  - In annual report



# A Similar Mechanism (#3)

## Water Restoration Certificates

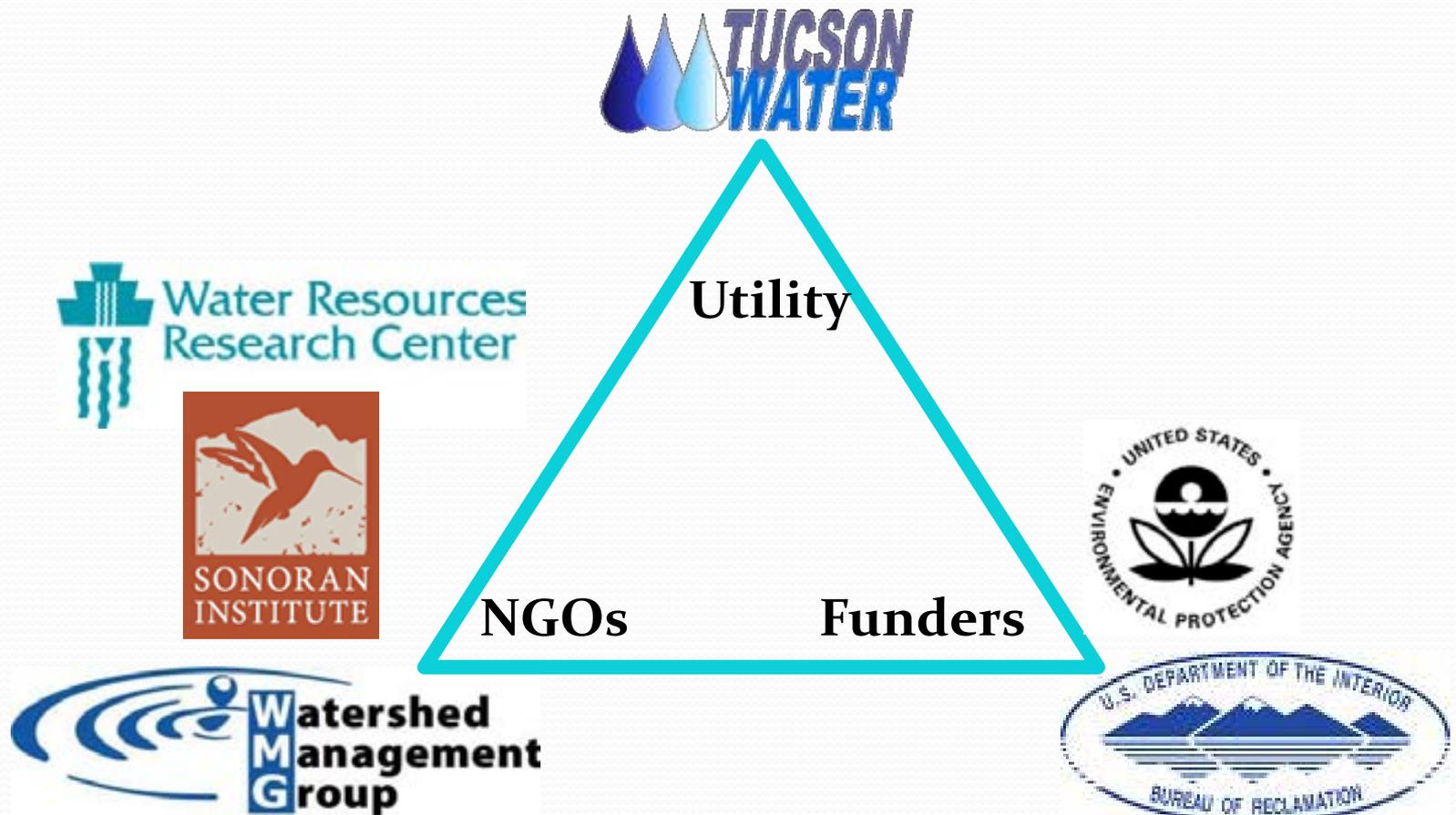
(Bonneville Environmental Foundation)

- Certificate represents 1,000 gallons of water & costs \$1
- Allows people/companies to offset water use
  - National Average
  - Dollar Amount
  - Gallons Used
  - Personalized Calculator
- Used to support NFWF-approved projects

# Presentation Overview

- Background and Purpose of Project
- The Conserve to Enhance Mechanism
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- **Piloting the Concept: The Tucson Story**
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# Tucson Pilot Program Partners



# Focus on Water Harvesting



# Goal: Enhance Tucson Quality of Life

- Connect *personal water savings* to river enhancement
- Raise awareness about *community benefits* of river systems
- Provide *additional water* for river restoration
- Increase local water *conservation*
- Inspire *community engagement* in river restoration projects



# Steps in Pilot

- **Identify fund oversight body**
- **Develop criteria**
- **Select environmental enhancement projects**
- **Invite homeowners to apply**



*Colorado River, Arizona*

# Managing Funds

- Develop fund management processes
  - Partner with existing organizations
  - Establish oversight body
  - Define criteria for receiving sites



*Esperanza Ranch, Arizona*



*Verde River, Arizona (Jeanmarie Haney, TNC)*

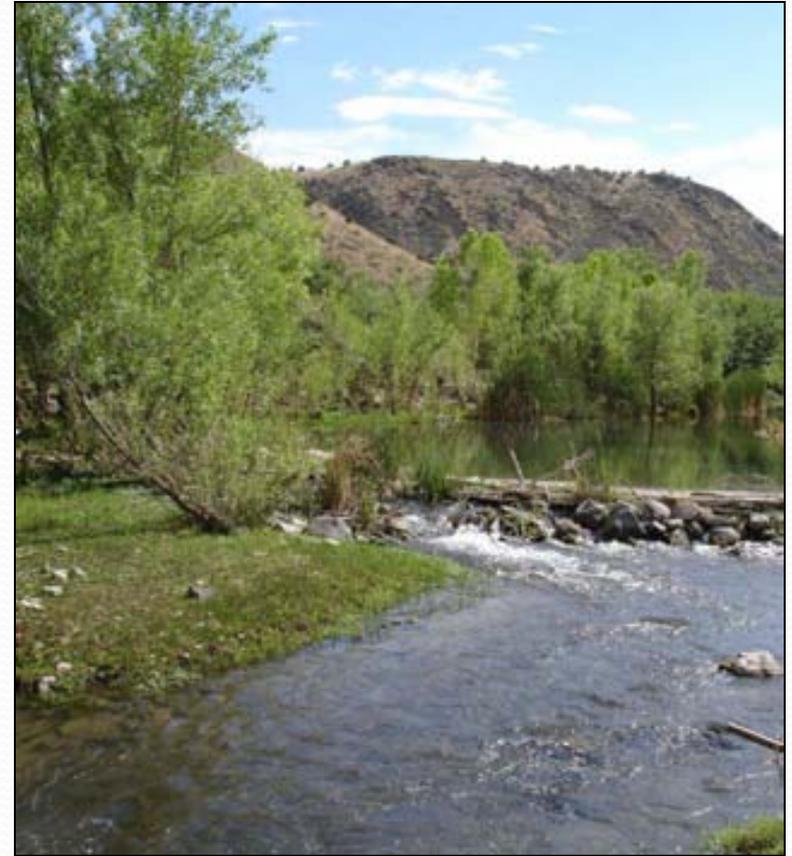
# Tucson Program's Advisory Board

Composition (expertise and representation of an organization are the criteria):

- 4 members from city or county government
- 4 members from NGOs or the University
- 1-2 members from local water utility
- 2 members from business/development community
- 2 members from community activism
- 1 member from water law

# Criteria for Selecting Projects

- Located within the Tucson Water service area
- Existing restoration project
- Publicly accessible
- Needs supplemental water for **Ecosystem Enhancement**
- Funding source
- Permits



*Verde River, Arizona (Jeanmarie Haney, TNC)*

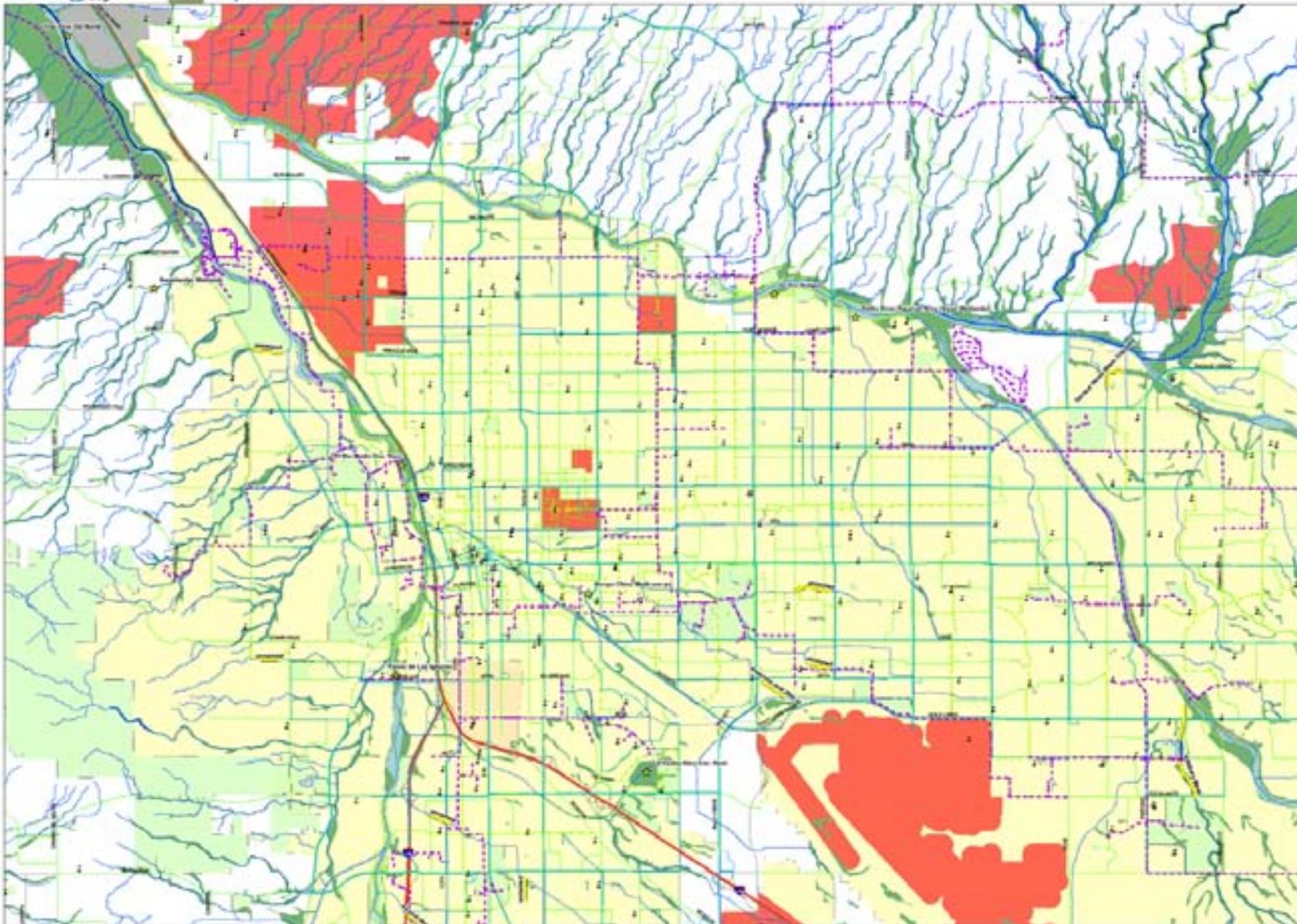
# Steps in Pilot

- Identify fund oversight body
- Develop criteria
- **Select environmental enhancement projects**
- Invite homeowners to apply



*Colorado River, Arizona*

# Environmental Water Bank - Potential Restoration Sites 2009



## Legend

- ★ Potential Restoration Sites
- Tucson Water Rastered Main Lines
- Potential Restoration Washes
- Ephemeral Wash
- Intermittent Streams
- Perennial Streams
- Bus Route
- Meter Bike Routes
- Bike Route
- Shared-use Path
- Planned Shared-use Path
- Interstate
- Major Streets
- Lake
- Washes 10,000cfs+
- Riparian Area
- Non-Tucson Water Services
- Parks
- Other Urban Areas
- South Tucson
- Tucson



Potential Restoration Sites: Based on J. Farris and C. Clark, 2005. Riparian Restoration (Risks in the Santa Cruz River Basin). Description of the project, analysis of the riparian habitat and cooperation. Water Resources Research Center, University of Arizona.

Potential Restoration Washes: Based on map provided by Frank Bivens, retired City of Tucson Hydrologist, identifying washes which exceed necessary conveyance capacity.

Base Database Sources: Income Geographic Information Council (AGIC), Home Area Governments, and Home County Department of Transportation (DOT).

Map Prepared: Colvin Report, Santa Watershed Specialist Watershed Management Group, Inc.

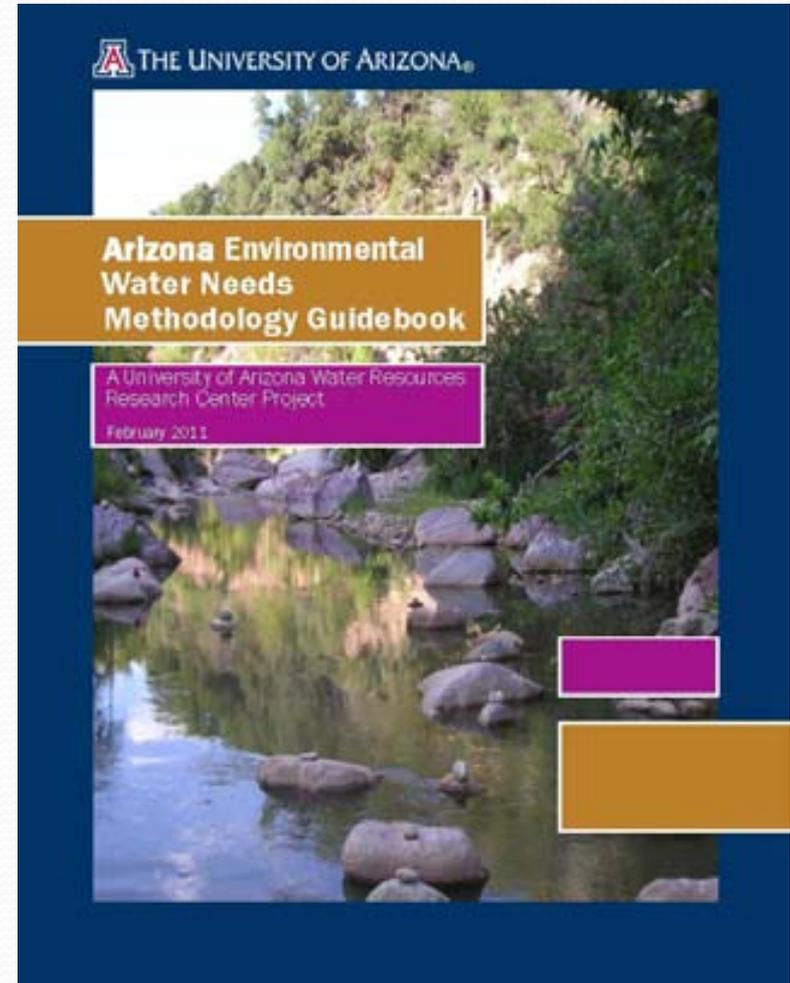
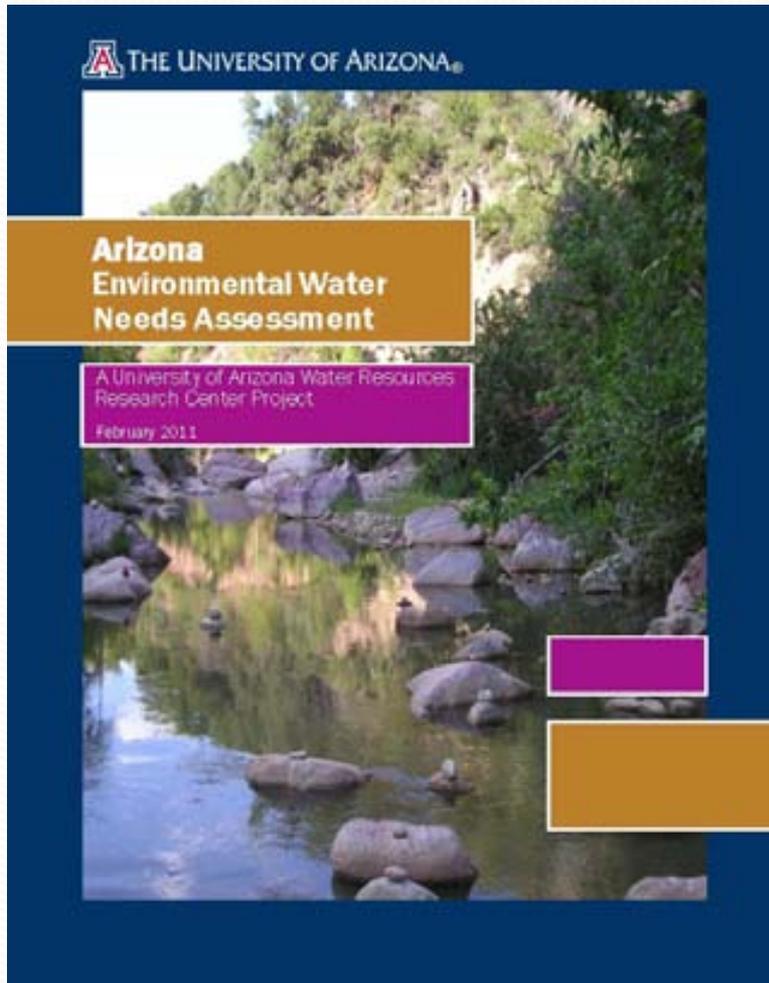
Date: 11 November 2009

# Tucson C2E Funding Priorities

- Acquisition of water
- Extension of water conveyance systems
- Extension of irrigation systems for onsite distribution
- Implementation of water harvesting landscaping
- Other innovative ideas

*Not more than 20% of budget may go to plants, signage and other outreach materials, staff costs/personnel, vehicle costs, restoration planning, printing*

# Arizona Environmental Water Needs Assessment



# Steps in Pilot

- Identify fund oversight body
- Develop criteria
- Select environmental enhancement projects
- **Invite homeowners to apply**



*Colorado River, Arizona*

# Outreach Plan

- Watershed Management Group issued press release
- Using Co-op program (started in 2008)
  - Existing outreach mechanisms
    - Approx. 200 household members
  - Involves knowledge transfer – Barn-Raising Model
  - Utilizes volunteer labor
  - Certified workshop instructors



# Recent Press on the Pilot

- UA News
- Arizona Public Media
- Western Farm Press
- Shaun McKinnon's Blog
- Arizona Daily Star



The screenshot shows a news article from the Arizona Daily Star website. The article is titled "UA effort links saving water, eco-restoration" and is categorized under "Science / Environment". The article text describes a program where volunteers receive subsidies to help pay for riparian-area work, linking water conservation to environmental restoration. A "For More Information" box provides links to learn more about the "Conserve to Enhance" program and tips on water conservation. The article also includes a "Recommend" button and a note that 6 people have recommended it.

Arizona Daily Star <sup>SN</sup> www.azstarnet.com 99¢ Per Week

Home News Sports Opinion Entertainment Lifestyles Daily

LOCAL NEWS NATIONAL WORLD BUSINESS BORDER CRIME EDUCATION ENVIRONMENT SCIENCE RE

Home / News / Science / Environment

VOLUNTEERS WHO RECEIVE SUBSIDIES TO HELP PAY FOR RIPARIAN-AREA WORK

## UA effort links saving water, eco-restoration

Story (22) Comments Font Size: [A] [A-]

Victoria Blute Arizona Daily Star | Posted: Monday, February 21, 2011 12:00 am | Comments

8 Recommend 6 people recommend this. Be the first of your friends.

### For More Information

- To learn more about Conserve to Enhance, visit [www.ag.arizona.edu/azwater/conserve2enhance.html](http://www.ag.arizona.edu/azwater/conserve2enhance.html)
- For more information and tips on water conservation, visit: [cms3.tucsonaz.gov/water/conservation](http://cms3.tucsonaz.gov/water/conservation)

Desert dwellers are often reminded to take shorter showers, buy water-efficient appliances and choose xeriscape over lush lawns.

A new University of Arizona program is creating a more direct link between that kind of conservation and an improved environment.

The UA Water Resources Research Center runs Conserve to Enhance, now in its pilot phase. The program is giving subsidies of between \$500 and \$1,000 to 50 local volunteer homeowners to install rainwater-harvesting equipment such as large cisterns. Fifteen additional homes will participate without subsidies.

But homeowners won't just save water and money. Through quarterly donations, they'll directly help the environment: Volunteers will give what they've saved to support a local riparian-restoration project.

The idea evolved from environmental-restoration research, said Joanna Nadeau of the UA water center.

# Pilot Participant Activities

- Plan water conservation features or strategies
- Implement conservation features or strategies
- Track water savings & document changes in water consumption
- Donate savings
- Visit restoration sites

# Zanjero Program



- Free Water Audit
- Schedule early
- Recommendations
  - Indoor plumbing fixtures
  - Outdoor irrigation

A screenshot of the Tucson Water Zanjero Program website. The top banner shows a collage of images: a water meter, a canal with people, a person in a yellow safety vest, and a man in a white lab coat. The text "tucsonaz.gov" and "ibtp" are overlaid on the images. Below the banner is a navigation menu with links for Government, Neighborhoods, Business, Departments, A-Z Answers, and E-Services. The main content area is titled "TUCSON WATER ZANJERO PROGRAM" and contains a detailed description of the program, including its history and the services it offers. A sidebar on the left lists various services like Billing &amp; Customer Services, Backflow Prevention, and Water Quality. A sidebar on the right provides contact information, including an emergency 24-hour line and a customer support unit.

# The Tucson Story: What's Next

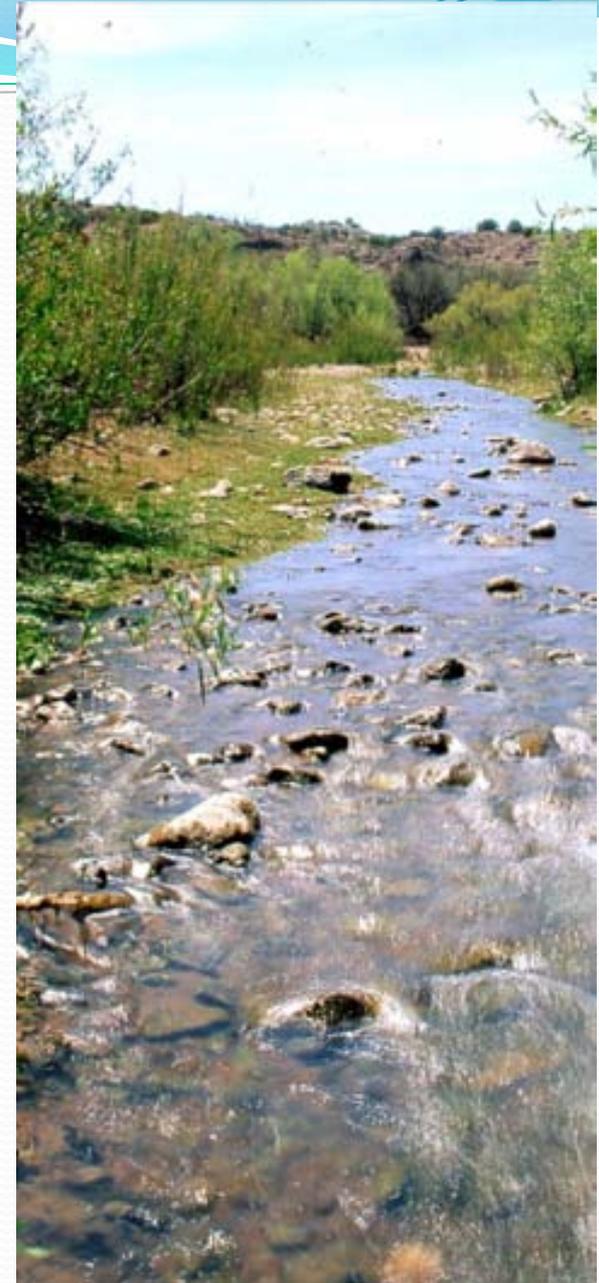
- Tucson Water checkbox changes
- Fundraising
- Develop web-based conservation calculator



*Slide Rock, Arizona (Credit: AZ State Parks)*

# Potential Constraints

- Outreach “Reach”
- Web development resources
- Tucson Water customer data access
- General staff resources



*Sonoita Creek, Arizona (Credit: AZ State Parks)*

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# Stakeholder Involvement to Date

- Outreach efforts included roundtables, presentations, workshops, one-on-one meetings, and surveys with:
  - Utilities
  - City and county officials
  - Environmental groups
  - Homeowners/residents
  - Professors
  - Hydrologists
  - Water conservation professionals



# Stakeholder Feedback – Survey

*Would you be willing to pay money to a fund that supports...  
(percent out of 137 total asked)*

- environmental enhancement in your community – 91%
- securing water for environment in your community - 90%
- river habitat protection for endangered species - 89%
- river restoration in your community – 87%

**80% of people surveyed would contribute to any of these!**

On average, respondents said they would **pay \$10/month** for one of these environmental water programs.

# Stakeholder Feedback – Survey

When asked *how they would like to contribute* to a fund supporting water for environmental enhancement or riparian restoration, respondents (n=137) chose:

- Tax on water use (59%)
- Money saved through conservation (42%)
- Voluntary donation on utility bill (41%)



# Stakeholder Feedback

- Perceived Benefits:
  - Value of program as educational tool
  - May stimulate existing water conservation programs
  - More efficient use of different types of water
- Concerns:
  - Costs to utility vs. costs to customer
- Variations on original mechanism
  - Conservation Calculator
  - Regional or Statewide fund

# Evaluation: Learning from the Pilot

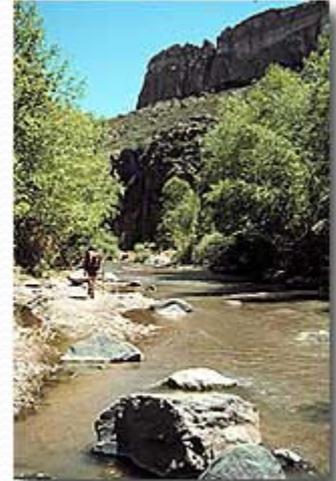
- Participant Survey/Application
- Outreach “reach”
- Water Use Tracking Tool: “Conservation Calculator”
  - Excel-based (short-term)
  - Web-based (long-term)
- Restoration Site Reporting
- Progress Report

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# Starting a Program

- Build partnerships
- Identify complementary programs
- Share the concept
- Evaluate interest
- Implement pilot programs
  - Accounting mechanism
  - Recruit participants
  - Oversight body
  - Receiving projects



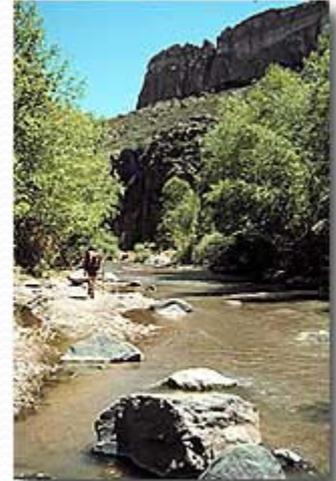
*Aravaipa Canyon, Arizona*



*Platte River, Colorado*

# Piloting with Partners

- Regional Outreach
  - Arizona communities
  - Colorado communities
  - New Mexico communities
  - National Organizations
- Program Development
  - Local NGOs
  - City staff
  - Local stakeholders

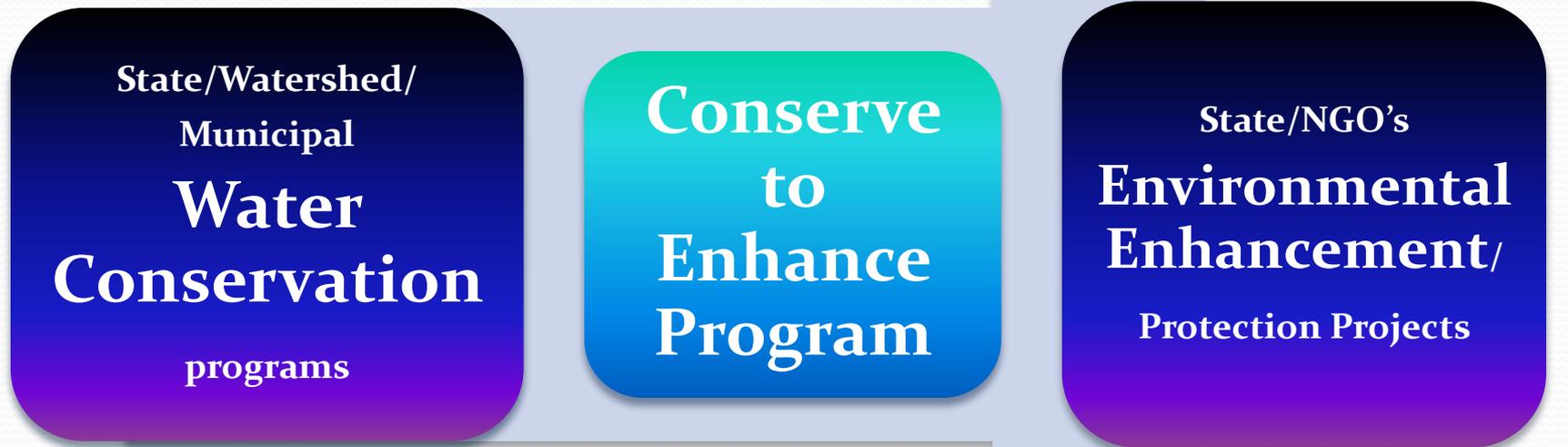


*Aravaipa Canyon, Arizona*



*Platte River, Colorado*

# Collaboration Opportunities



Program Development

Funding

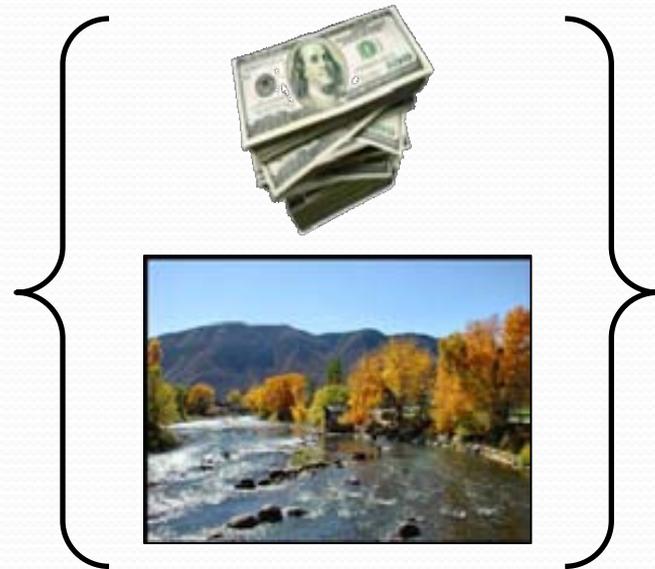
Program Outreach

Accounting Mechanism

Selecting Receiving Projects

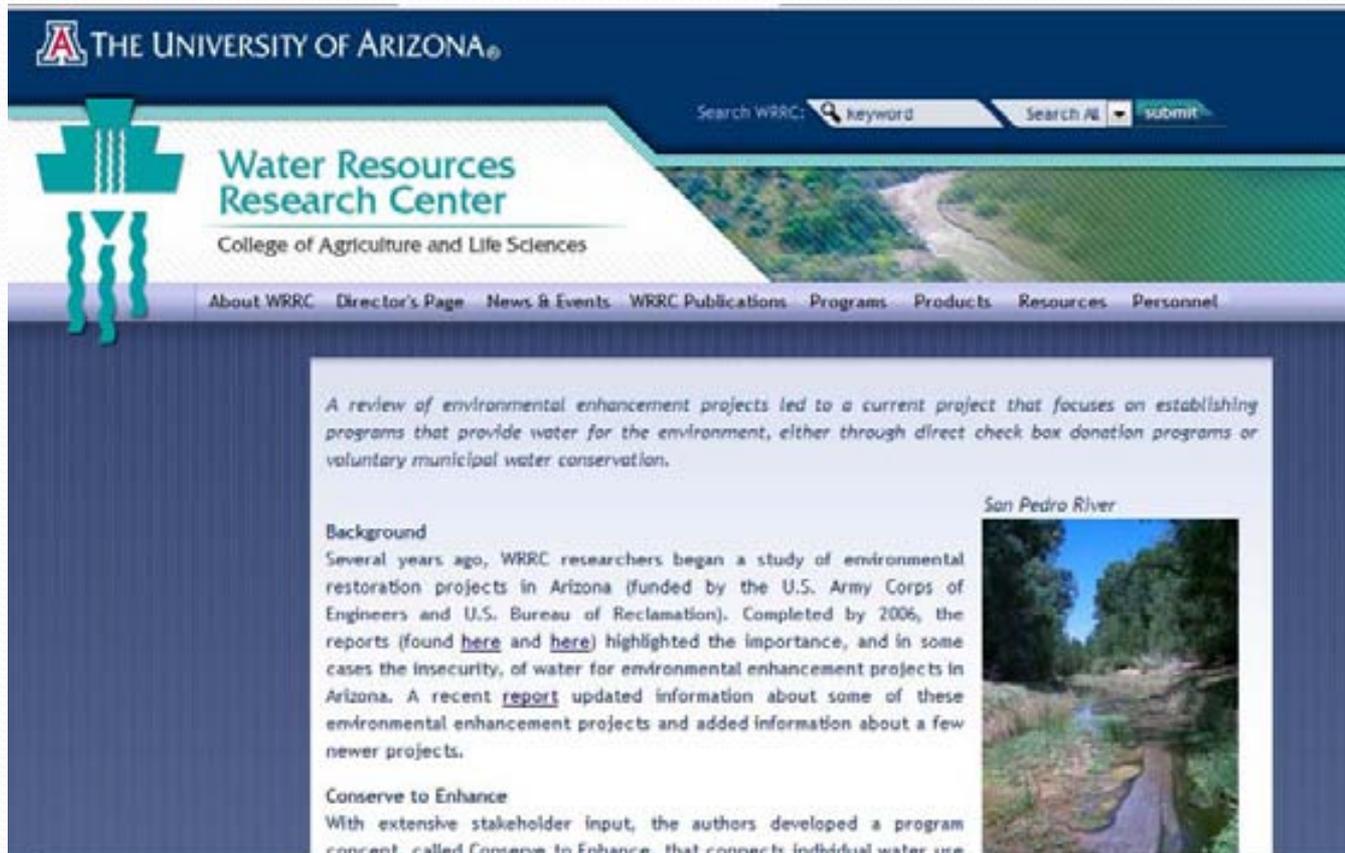
# Next Steps

- Identify new partners within and outside of Arizona for implementing C2E pilot programs
- Develop and expand pilot programs
- Evaluate pilot programs



# Website

<http://www.cals.arizona.edu/azwater/conservedenhance>



**THE UNIVERSITY OF ARIZONA**

Search WRRC:  Search All

**Water Resources Research Center**  
College of Agriculture and Life Sciences

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*A review of environmental enhancement projects led to a current project that focuses on establishing programs that provide water for the environment, either through direct check box donation programs or voluntary municipal water conservation.*

**Background**  
Several years ago, WRRC researchers began a study of environmental restoration projects in Arizona (funded by the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation). Completed by 2006, the reports (found [here](#) and [here](#)) highlighted the importance, and in some cases the insecurity, of water for environmental enhancement projects in Arizona. A recent [report](#) updated information about some of these environmental enhancement projects and added information about a few newer projects.

**Conserve to Enhance**  
With extensive stakeholder input, the authors developed a program concept, called Conserve to Enhance, that connects individual water use

San Pedro River



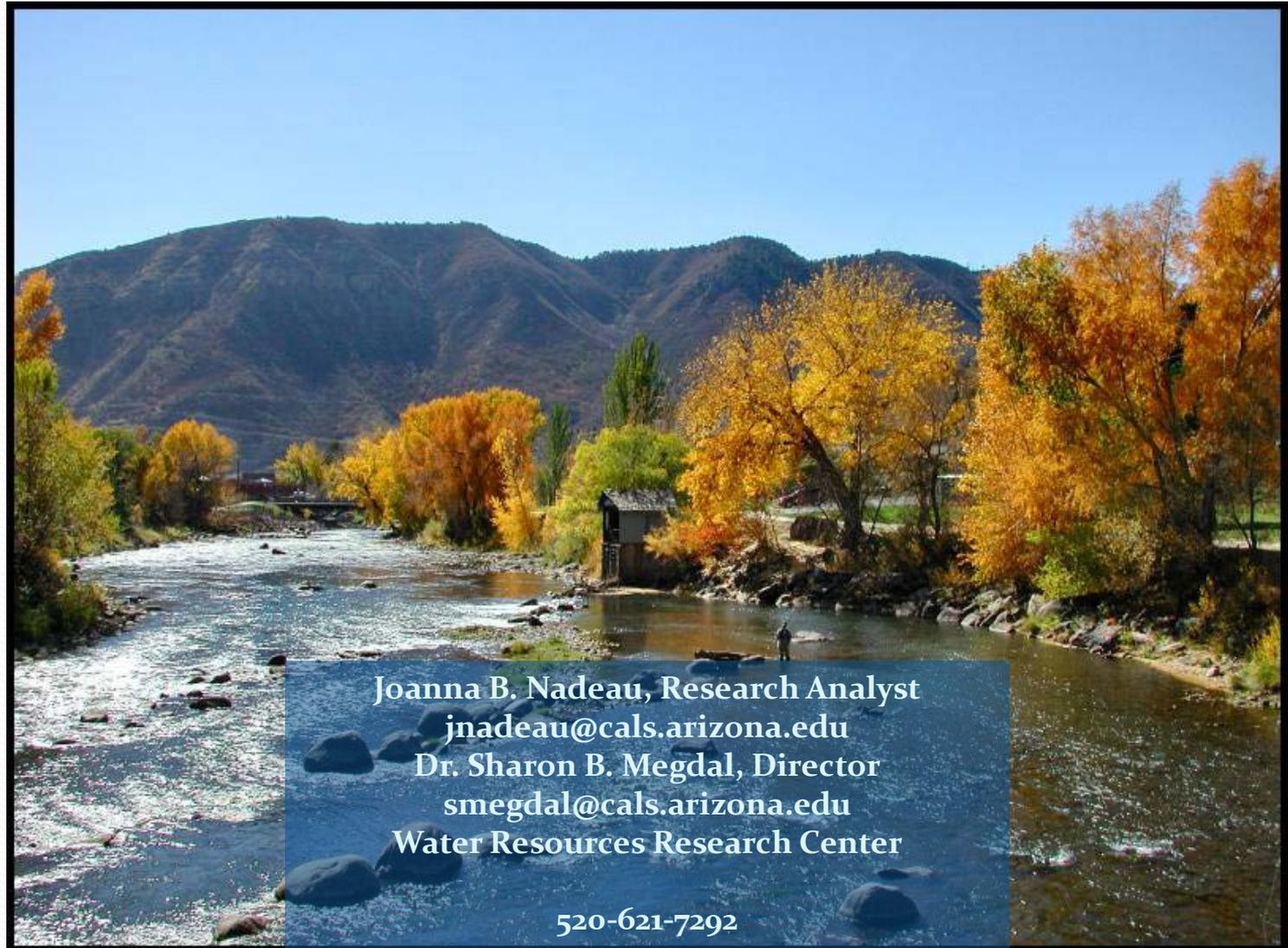
# Conserve to Enhance

## *References:*

- Megdal, Dr. Sharon B., Nadeau, Joanna, and Tiffany Tom. 2011. *The Forgotten Sector: Arizona Water Law and the Environment*, Arizona Journal of Environmental Law and Policy. In Press.
- Megdal, Dr. Sharon B., Bate, Joanna, and Andrew Schwarz. June 2009. *Securing Water for Environmental Purposes: Establishing Pilot Programs*, Intl. Journal of Environmental, Cultural, Economic and Social Sustainability 5.\*
- Gerlak, Andrea, Eden, Susanna, Megdal, Dr. Sharon B., Lacroix, Kelly Mott, and Schwarz, Andrew. 2009. *Restoration and river management in the arid southwestern USA: exploring project design trends and features*. Water Policy 11: 461-480.\*
- Schwarz, Andrew and Dr. Sharon B. Megdal. January 2008. *Conserve to Enhance*, Journal of the American Water Works Association 100 (1): 42-53.
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- Megdal, Dr. Sharon B., Lacroix, Kelly Mott, and Andrew Schwarz. 2006. *Projects to Enhance Arizona's Environment: An Examination of Their Functions, Water Requirements, and Public Benefits*. WRRC and US Bureau of Reclamation, Tucson, AZ.\*

\*Available on WRRC website: <http://cals.arizona.edu/azwater/publications.php>

# Questions?



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