

**Cultivating Urban Stewardship through Collaborative
Performance-based Policy Development**

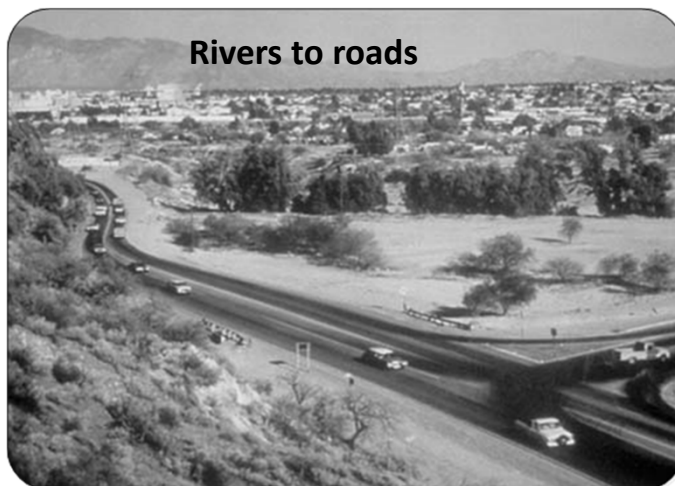
Catlow Shipek
Co-founder & Sr. Program Manager



Tucson, 1904. Santa Cruz River from “A” Mountain

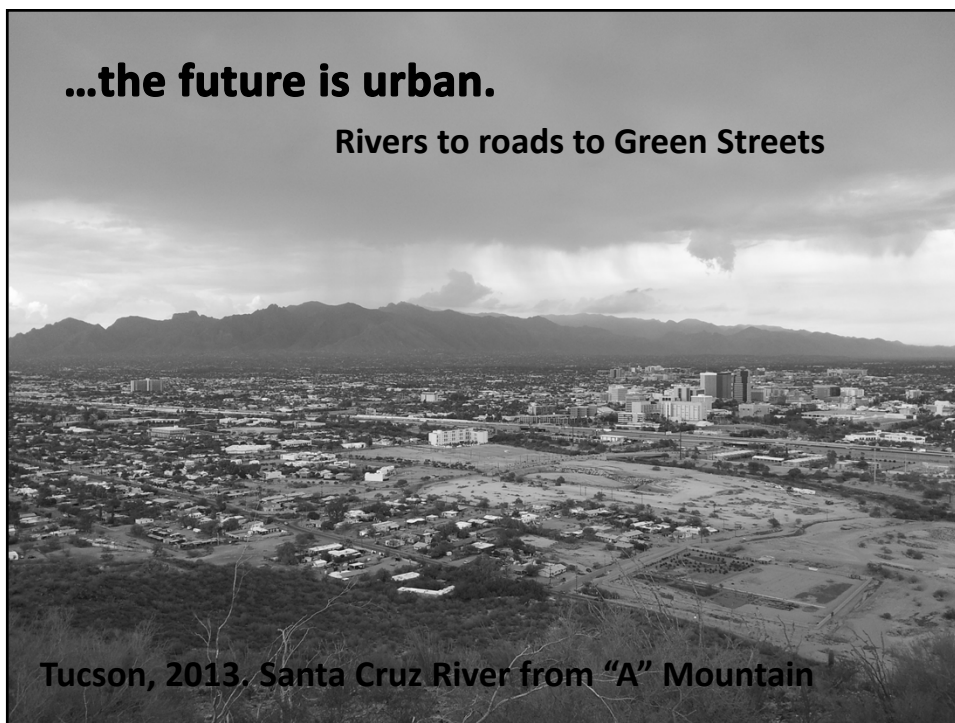


Tucson, 1981. Santa Cruz River from "A" Mountain



...the future is urban.

Rivers to roads to Green Streets



News Flash --

NRDC Rooftop to Rivers Report 2013 Update

Tucson designated an 'emerald' city for our

- Green Streets Policy
- Rainwater Harvesting Rebate



Curb inlet allows stormwater runoff to enter a street-side basin

TUCSON, ARIZONA

Tucson gained two Emerald City points. One was for its new retention standard, requiring that stormwater-harvesting features be integrated into all publicly funded roadway development and redevelopment projects; a second was awarded for the city's increasing incentives for private-party actions, specifically its rebate program for residential rainwater harvesting.

Tucson's Green Streets policy also promotes equity by extending tree canopy to low-income communities.¹⁰⁰ The development of this policy was led by the Watershed Management Group, a nonprofit organization that provides green job training and green infrastructure resources and partners with city organizations such as the Department of Transportation and the Bike and Pedestrian Program to integrate green infrastructure into city projects.¹⁰¹

The city also expanded its rebate program for residential rainwater harvesting. The two-level funding system will rebate the costs of qualifying rainwater harvesting systems to a maximum of \$2,000. Levels of funding are based on the amount of water applicants aim to capture and the practices that are implemented.¹⁰² Households that install a permanent gray water irrigation system can also apply for Tucson Water's Single Family Residential Gray Water Rebate Program for reimbursements up to \$1,000.¹⁰³

Finally, in November 2013, Tucson will vote on replacing its 2001 General Plan with "Plan Tucson, which includes a focus on green infrastructure."¹⁰⁴

Emerald Cities

"Emerald Cities," listed darkest to lightest by the number of key green infrastructure actions taken

City	Long-term green infrastructure (GI) plan	Retention standard	Requirement to use GI to reduce some portion of the existing impervious surfaces	Incentives for private-party actions	Guidance or other affirmative assistance to accomplish GI within city	Dedicated funding source for GI
Philadelphia, PA	★	★	★	★	★	★
Milwaukee, WI	★	★	★	★	★	★
New York, NY	★		★	★	★	★
Portland, OR		★	★	★	★	★
Syracuse, NY	★		★	★	★	★
Washington, D.C.		★	★	★	★	★
Aurora, IL	★	★			★	★
Toronto, Ontario, Canada	★	★		★	★	
Chicago, IL		★		★	★	
Kansas City, MO				★	★	★
Nashville, TN	★				★	★
Seattle, WA				★	★	★
Tucson, AZ		★		★		
Pittsburgh, PA		★			★	
Rouge River Watershed, MI					★	

Transforming our Streets with Green Infrastructure

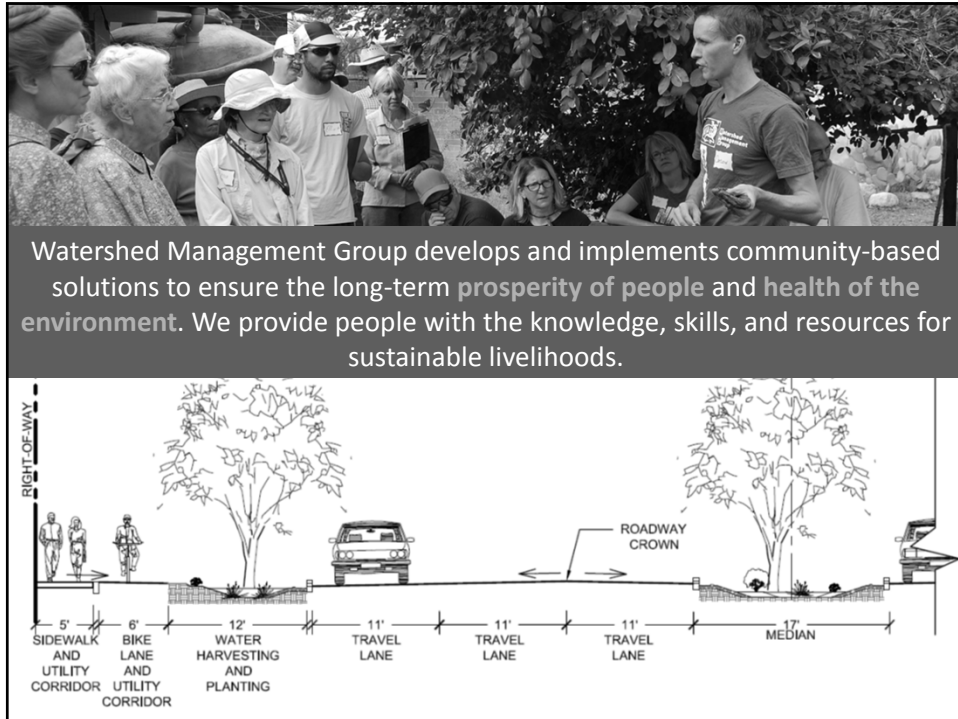


Photo Credit: Rainwater Harvesting for Drylands and Beyond, Lancaster

www.watershedmg.org



Most of us still have dusty, hot gravel-scapes



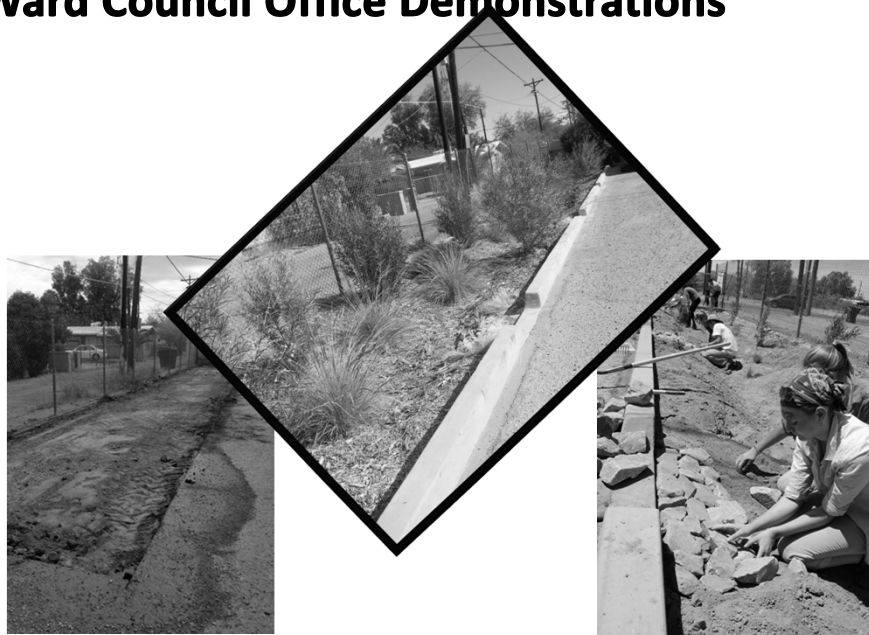
Community-based Policy Development



Rights-of-Way Demonstrations



Ward Council Office Demonstrations



Residential retrofits – Green Living Co-op



Before

www.watershedmg.org

Retrofit behind curb at residence



During – Contractor Excavation

www.watershedmg.org



**During – Volunteer Workshop
(fine grading, rip-rap, planting)**

www.watershedmg.org



**During – Volunteer Workshop
(mulch, cleanup)**

www.watershedmg.org



After

www.watershedmg.org



1.75 years later

Professional Trainings

watershedmg.org/tech-trainings

- **Water Harvesting Design Certification**
 - September 15-21, Albuquerque, NM
 - November 17-23, Tucson, AZ
- **LID and Green Infrastructure – Urban Retrofits**
 - October 24-25, Phoenix, AZ
- ...and more



Download your free copy at watershedmg.org/green-streets

Green Infrastructure for Southwestern Neighborhoods



 **Watershed
Management
Group** Version 1.2
Revised October 2012

Tools and Techniques

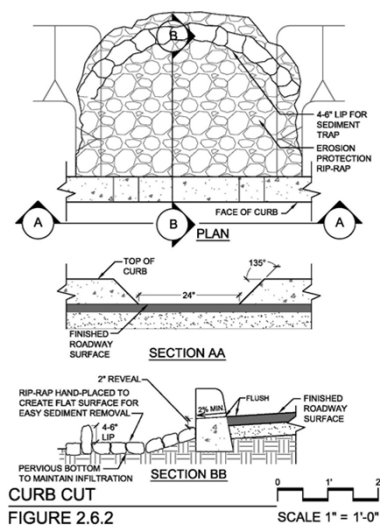


FIGURE 2.6.2

www.watershedmg.org

Curb Cuts



Tools and Techniques

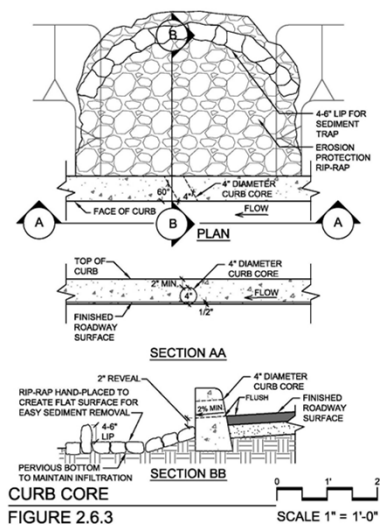


FIGURE 2.6.3

www.watershedmg.org

Curb Cores



Tools and Techniques

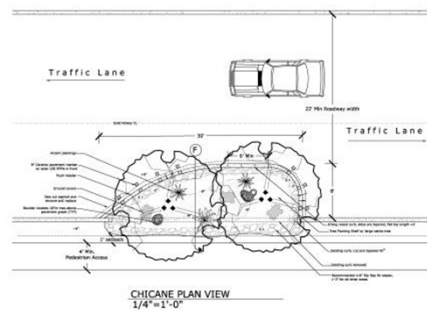
Street-side Basins



www.watershedmg.org

Tools and Techniques

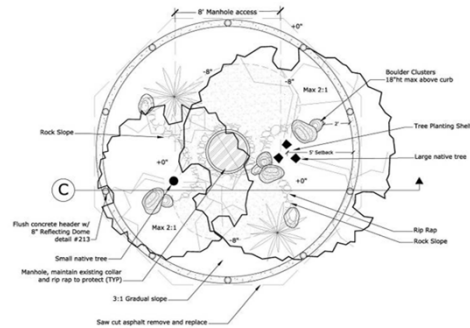
Chicanes



www.watershedmg.org

Tools and Techniques

Traffic Circles



www.watershedmg.org

Our Local Champions of Green Infrastructure




Environment - Jonathan R. x
www.mayorrottschild.com/our-city/environment/


Tucson to Capture Stormwater for Irrigation of Roadway Vegetation

The Mayor and Tucson City Council voted unanimously May 29 to adopt a Green Streets policy to direct the Tucson Department of Transportation (TDOT) to use stormwater runoff to irrigate trees and other vegetation in medians and roadsides.

The Mayor's Office has been working with the nonprofit Watershed Management Group, TDOT and a group of business and community stakeholders to draft the policy, which requires new and reconstructed city streets to include features such as curb cuts that allow stormwater to flow in and irrigate an area.



This curb cut diverts stormwater to a streetside planting basin. Photo: Watershed Management Group



"Everybody who has lived in Tucson during the monsoon has seen water running down the street in a storm. That's a wasted resource," said Mayor Rothschild. "And when the weather's hot, we all prefer to

Issue: Urban Heat Island



Issue: Sustaining Urban Forests

- According to American Trees, a 25% Canopy Cover
- Where is Tucson?
2% - 10%



Issue: Increased Runoff and Flooding



www.watershedmg.org

Issue: Non-Point Source Pollution



Issue: Water Conservation



Issue: Bike and Pedestrian Enhancements



Advisory Committee

- Watershed Management Group
- Mayor's Office
- Tucson Dept. of Transportation
 - Landscape Architect
 - Hydrologist
- Wheat Scharf, Landscape Architectural Firm
- Stantec, Engineering Firm
- Tucson Office of Conservation and Sustainability

Green Streets Active Practice Guideline

Applies to new construction and reconstruction

Performance Goals

- Stormwater to be directed through GI before entering storm drains
- Landscape areas to retain $\geq \frac{1}{2}$ " of rain on public right-of-way
- Landscape plantings must meet coverage metrics to provide canopy shade and ground cover
- Landscape within 5 years to survive on harvested rainwater
- And, planning process requires coordination and identification of potential GI features at the very start.

Read it: watershedmg.org/policies

Green Streets Active Practice Guideline

ADOPTED BY THE
MAYOR AND COUNCIL

August 6, 2013

RESOLUTION NO. 22116

RELATING TO TRANSPORTATION; AUTHORIZING AND APPROVING THE ADOPTION AND IMPLEMENTATION OF THE GREEN STREETS POLICY FOR THE TUCSON DEPARTMENT OF TRANSPORTATION; AND DECLARING AN EMERGENCY.

Collaborative Policy Development

Build a reputation -
start small, build on
success

Build trust and public
knowledge

Find your champions!

Develop strategic
stakeholder teams

Aim high – know how
to compromise


Have a watch dog –
ensure feedback

Lessons Learned

- Engage and foster trust early and regularly
- Take the time to address long-standing issues early
- Strive for meaningful yet simple solutions
- Make policy performance-based
- Plan for periodic policy review

Pima County Regional Flood Control District


**Design Standards
for
Stormwater Detention and Retention**



Supplement to Title 16, Chapter 16.48,
Runoff Detention Systems
Floodplain and Erosion Hazard Management Ordinance

Pima County Regional Flood Control District
97 E. Congress St., 3rd Floor
Tucson, AZ 85701-1791
(520) 724-4600

June 2014






Regulatory Highlights:

- First flush retention requirement (retain first 0.5" of rainfall)
- Introduces integrated site planning and LID practices
- And more...

LID Working Group (local jurisdictions, the consulting community and non-profit organizations)

**Low Impact Development and Green
Infrastructure Guidance Manual**

August 2014 (Draft)

Provides non-regulatory technical guidance for implementing neighborhood-scale water harvesting, Green Infrastructure and Low Impact Development (GI/LID) Practices throughout Pima County to improve surface water quality.

Pima County Zoning Code Updates

18.73.0 Title 18 - ZONING

Stormwater Harvesting & Use Ordinances – DRAFT, 25 August 2014

- **General goals:** differentiate ‘rainwater’ and ‘stormwater’ harvesting and standardize use throughout Zoning Code, and codify and provide incentives for stormwater harvesting in landscape areas for required bufferyards and off-street parking
- **Chapter 18.03 GENERAL DEFINITIONS** (*new definitions, with terminology from APA, EPA, & WMG*)
- **Chapter 18.07 GENERAL REGULATIONS & EXCEPTIONS** (*new regulations*)
 - 18.07.030 Land use regulations.
- **Chapter 18.09 GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS** (*text changes only*)
 - 18.09.100 Conservation Subdivision
- **Chapter 18.39 GENERAL COMMERCIAL STANDARDS** (*text changes only*)
- **Chapter 18.73 LANDSCAPE, BUFFERING AND SCREENING STANDARDS** (*text changes and new standards*)
- **Chapter 18.75 OFF-STREET PARKING AND LOADING STANDARDS** (*text changes and new standards*)

What's Next? A Green Infrastructure Maintenance Manual



What's Next? Funding Source + Other Dryland Cities

"Emerald Cities," listed darkest to lightest by the number of key green infrastructure actions taken

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Portland, OR		★	★	★	★	★
Syracuse, NY	★		★	★	★	★
Washington, D.C.		★	★	★	★	★
Aurora, IL	★	★			★	★
Toronto, Ontario, Canada	★	★		★	★	
Chicago, IL		★		★	★	
Kansas City, MO				★	★	★
Nashville, TN	★				★	★
Seattle, WA				★	★	★
Tucson, AZ		★		★		
Pittsburgh, PA		★			★	
Rouge River Watershed, MI					★	