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# The Santa Cruz River Heritage Project: Reviving An Urban River

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# Rethinking the Future of Recycled Water

- Tucson's conservation ethic is strong and succeeding.
- Our potable water use is at mid-1980's levels.
- Reclaimed water use has leveled off.
- Our drivers and opportunities have shifted.

# Thinking Beyond the Aquifer

- Before we depleted the aquifer, we dried up the river
- The institutional framework incentivizes out-of-channel uses of effluent
- Traditional projects often struggle to achieve multiple benefits

**We can do better...**




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**Endangered topminnow's return to Santa Cruz River in Tucson is a big step to recovery**

By Tony Davis Arizona Daily Star Dec 15, 2017



These Gila topminnows were found during the November 2017 fish survey by the Sonoran Institute on the Santa Cruz River in Tucson.

**Past Tucson area topminnow discoveries**

- 1851, first collected in the Santa Cruz River near Tucson, by

**RECOMMENDED**

- Watchdog: FBI could have tried harder to hack iPhone
- Egypt tries to boost voter turnout with incentives, threats
- The Latest: EU
- Stormy Daniels

The discovery of endangered Gila topminnows in the Santa Cruz River near Tucson puts the tiny native fish a step closer to recovery.

# The Rio Reimagined

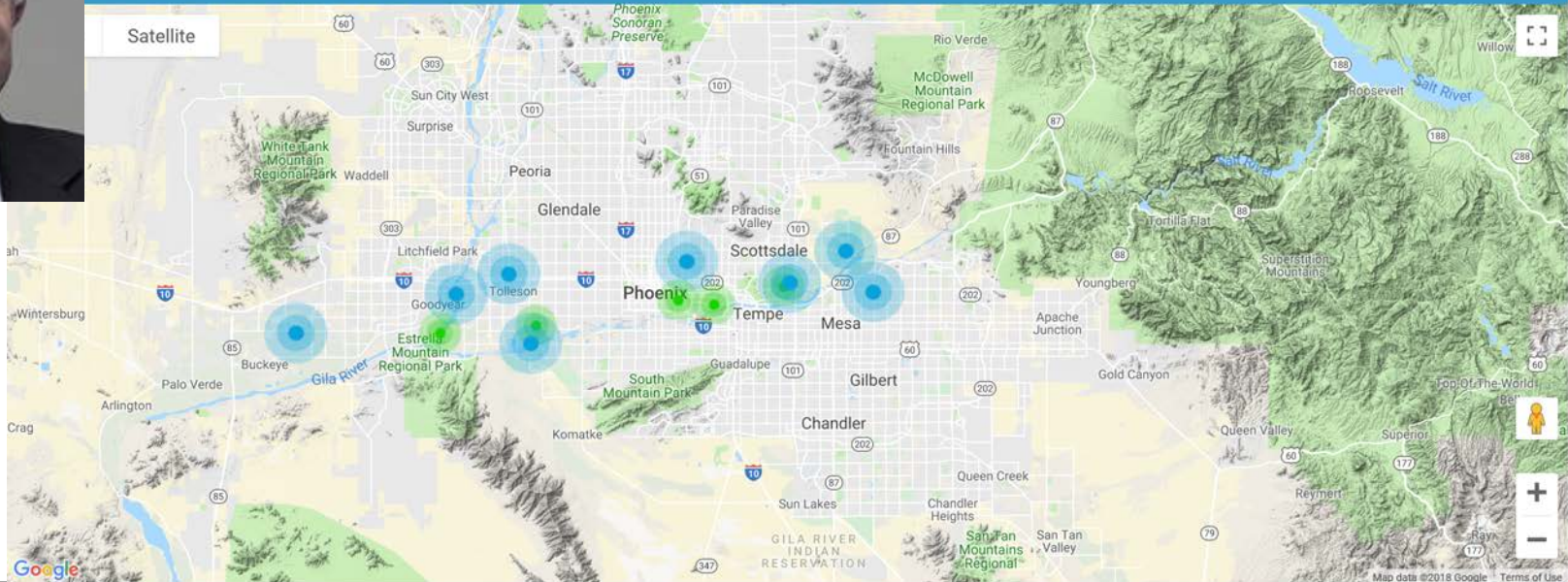


The Rio Reimagined

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## River Map

Explore the dynamic projects and partners engaged in the river corridor.



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# THE SANTA CRUZ RIVER

## HERITAGE PROJECT

*Revitalizing a River with Reclaimed Water*



# Urban River Revival

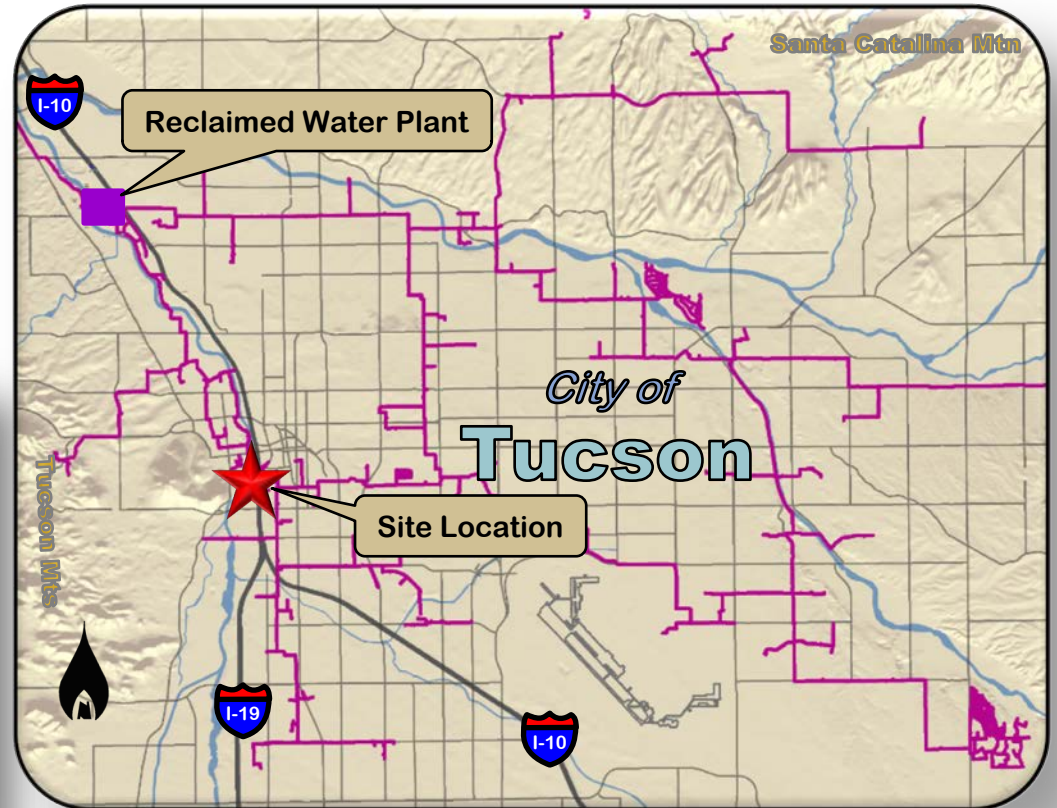


- Introduce reclaimed water upstream from downtown Tucson.
- Cultivate native vegetation.
- Preserve flood protection.



# Project Overview

- Construction Cost - \$760,000
- Design Phase - Complete
- Begin Construction - Early 2019
- Begin Operation - Late 2019



Project Location Map

# Project Phasing

## 1 Silverlake Road Outfall

- Approximately 3,800 Acre Feet per Year
- Maximum flow rate of 3.4 MGD
- Expected Recharge Not Beyond Cushing Street

## Potential Future Phases

- 2 South of Cushing Street
- 3 Off-channel Public Amenity



### Legend

- Phase 1, 2 or 3
- Potential In-Channel Flow reach



# Events and Media



## WE WELCOME YOU TODAY.

FOR NEARLY 50 MILES, THE BANKS OF THE RIO SALADO WIND THROUGH COMMUNITIES OF ALL SIZES IN MARICOPA COUNTY. YET ONLY A SMALL PORTION OF THIS EXPANSE IS DEVELOPED, WITH TEMPE TOWN LAKE AS THE MOST-NOTED EXAMPLE OF THE RIVER'S POTENTIAL.

Today, civic and business leaders will explore possibilities that could reinvigorate every community adjacent to the Rio Salado by bringing people back to the river. We will collaborate with experts who have implemented successful river reclamation projects in other communities beyond Arizona borders.

Some of this forward-thinking work is already underway. Our vision is to unite every project – whether already in progress or still just a ground-breaking plan – to create a cohesive Rio Reimagined platform to ensure continuity and success. Looking even further, we hope to support other urban waterways projects throughout the state. Tucson's plan to restore the Santa Cruz River also has the potential to be a water-positive effort that can redefine the community; Arizona Forward recognizes this as an opportunity to make Tucson an even better place to live and work. Our hope is to support community-based efforts to reclaim waterways in ways that make sense for every individual municipality.

This is a rare opportunity to be part of history. Thank you for being here to provide your insight and expertise.

*Lori Singleton and Dave Skinner*

## Plenary Session: Reimagining Arizona's Rivers

AHS








Thursday, September 20, 2018 | 8:30 AM – 10:00 AM | Cottonwood I & II

**Opening Remarks:** Austin Kennedy, Office of Senator John McCain

**Moderator:** Sara Porter, Director, Director of the Kyl Center for Water Policy, Morrison Institute, ASU

**Panel Members:** Melissa McCann, Director, Arizona State University – University City Exchange; Tim Thomure, Director, Tucson Water; Gila River Indian Community Representative; Mike Fulton, Flood Control District of Maricopa County

Two major river restoration projects are planned for the state of Arizona: Rio Reimagined in Maricopa County and The Santa Cruz River Heritage Project in Pima County. These proposed projects have unique objectives when it comes to economic development, recreational opportunities, environmental conservation, and water management goals. For the 2018 Symposium, the AHS Phoenix Chapter has brought together panelists who will discuss and compare these proposed projects, including the challenges that lay ahead for each.

- [Reclaimed Wastewater Will Soon Revive a Landmark Arizona River](#)  (Treatment Plant Operator magazine, August 6, 2018)
- [Ancient River Could Flow Again in Tucson, Thanks to Recycled Wastewater](#)  (Water Deeply online, June 18, 2018)
- [Tucson to resurrect river with recycled water](#)  (MNN.com, June 18, 2018)
- [Tucson Water puts plan in motion to get water flowing into Santa Cruz River along downtown](#)  (KVOA 4 news, May 30, 2018)
- [Lifeblood of the Desert: Restoration Brings New Life to Santa Cruz River](#)  (AZPM, April 10, 2018)



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# Benefits of

# THE SANTA CRUZ RIVER HERITAGE PROJECT

- Virtually all of the City's reclaimed water put to beneficial use.
- Increased river flows and riparian habitat in the City.
- Potential economic development driver.
- Lowest cost option that maximizes use of existing infrastructure.
- Supports historical and cultural community projects.
- Improves water management efficiency.



# Challenges of

# THE SANTA CRUZ RIVER HERITAGE PROJECT

- Current institutional framework incents off-channel projects.
- Need to match benefits to diverse investors.
- Competing uses for limited resources: land, water, and money.
- Balancing flood control risk versus in-channel habitat.
- Satisfying competing interests.
- Maintaining stakeholder support over the years of implementation.



# Current Effluent Recharge Options

## Constructed Projects

- Off-channel infrastructure
- Significant cost
- Removes water from the natural environment
- ***0% cut to the aquifer***

## Groundwater Savings Facilities

- Off-channel infrastructure
- Moderate cost
- Removes water from the natural environment
- ***0% cut to the aquifer***

## Managed Projects

- Existing stream channels
- Minimal infrastructure
- Minimal cost
- Water in the environment
- ***50% cut to the aquifer***



# Hydrologically Equivalent But...



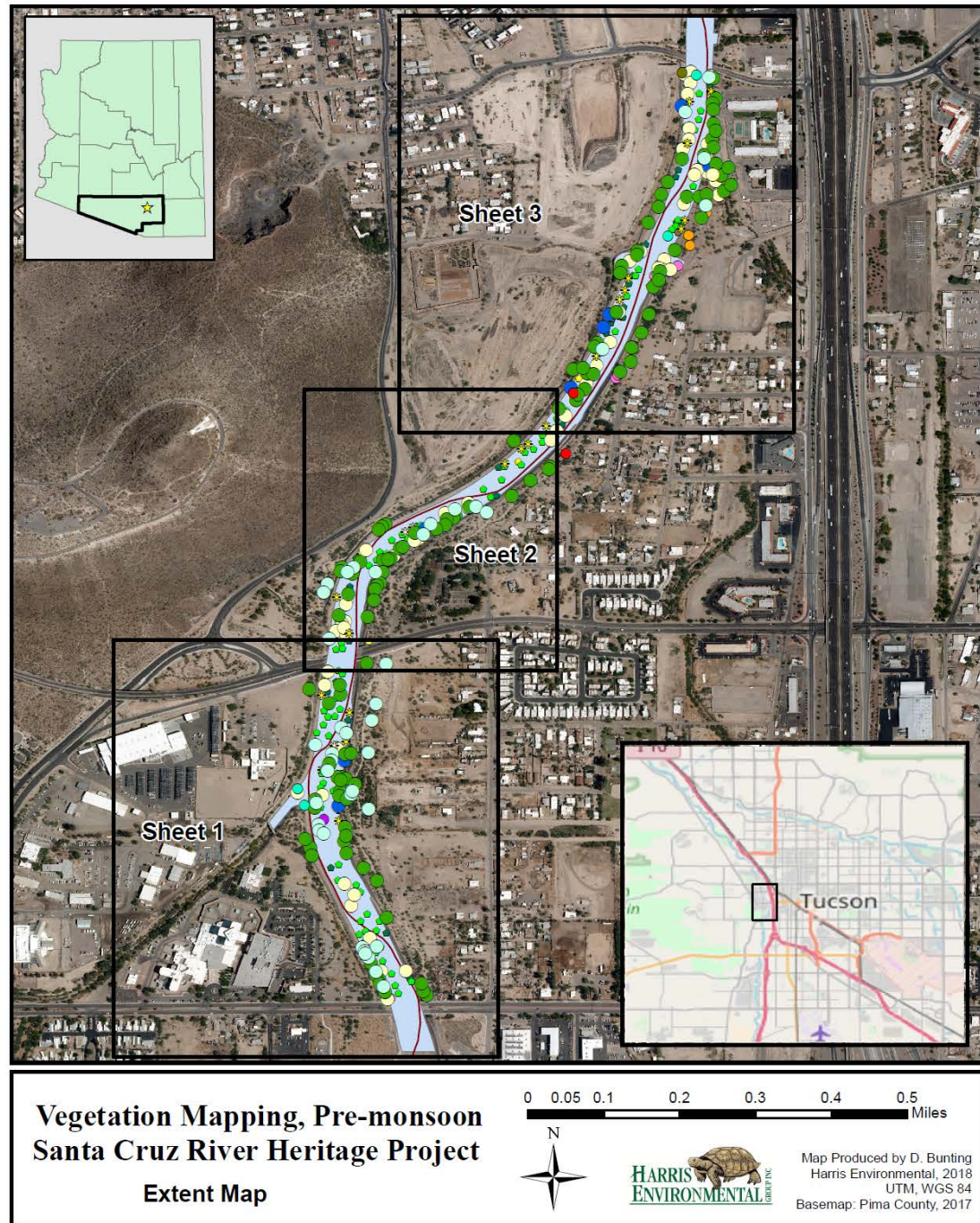
**50%**

**100%**

# Baseline Mapping

65 Species Identified  
75% were Native  
Non-natives were dominated by Athel tamarisk and buffelgrass

Vegetated Area = 36%  
Bare Ground = 52%  
Developed = 12%



# Revegetation Recommendations

- River maintenance – coordination w/ Flood Control District.
- Large plantings from stock are not recommended.
- Combination of:
  - Seeding (locally sourced and supplemented)
  - Assisted Natural Regeneration (harvested from downstream)
- Timed for germination and water availability.
- Monitoring to protect against invasives.
- Regular maintenance.



# Status and Next Steps

- Interactions with partners and stakeholders (ongoing).
- Groundwater flow modeling and water quality assessments. ✓
- Facility engineering. ✓ Pipeline engineering. ✓ Bidding soon.
- Permits. ✓
  - AZPDES ✓
  - APP/USF/WS under agency review
- Pre-monsoon vegetation assessment. ✓
- Post-monsoon vegetation assessment.
- Develop off-channel concepts.
- Address institutional framework.

