

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)







# It's a small world:

How smaller water utilities incorporate water efficiency and conservation programs with limited means

**Jennifer Davidson**, Water Resource Analyst, City of Surprise

**Ian Johnston**, Environmental Analyst, Aiqueous

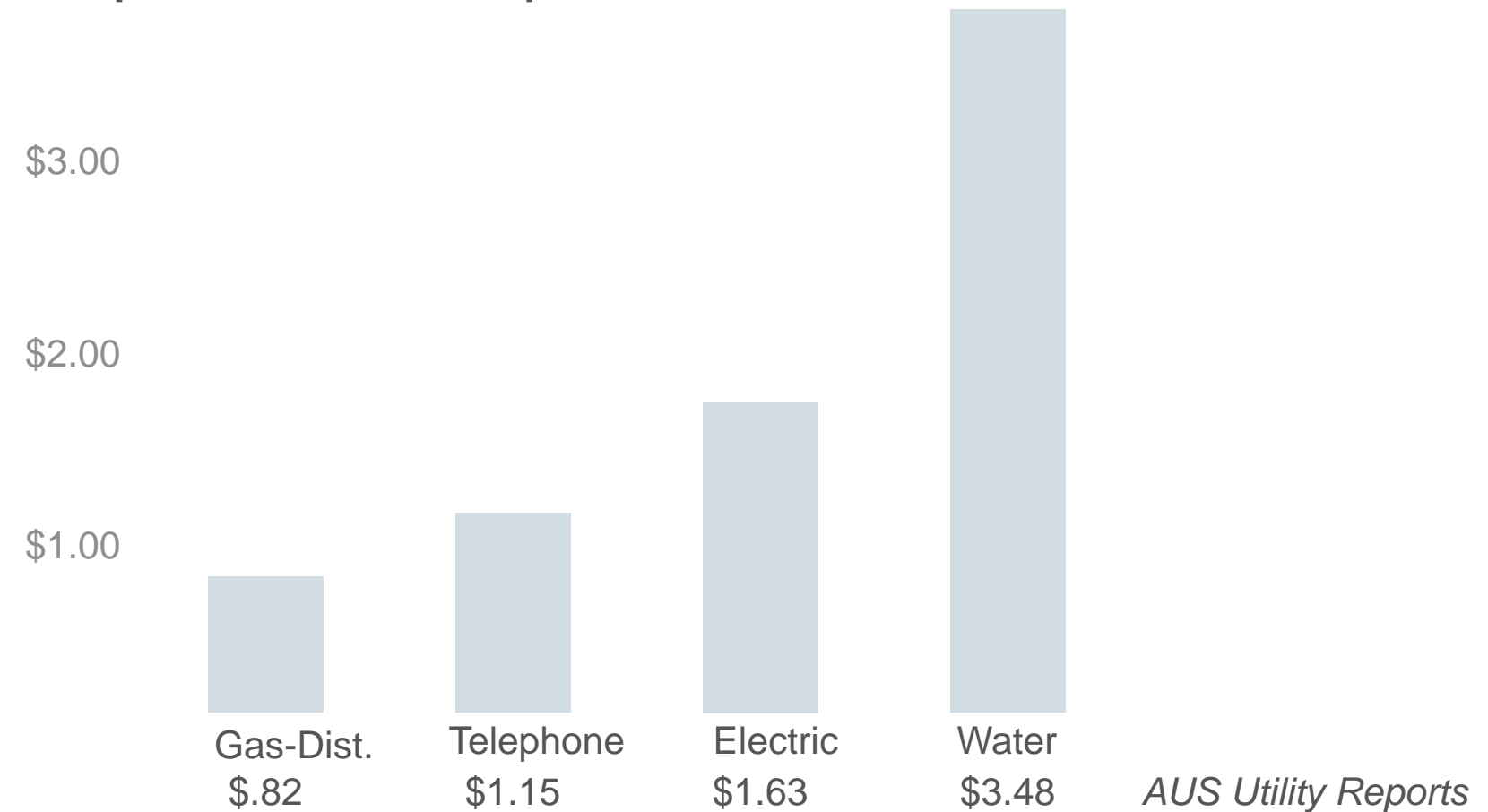


# Small water utilities: the same & yet different

## Challenges:

- 💧 Aging infrastructure
- 💧 Cash flow
- 💧 New infrastructure
- 💧 Drought and water scarcity
- 💧 Water quality standards & regulations
- 💧 Customer expectations

Capital invested per \$1 of revenue



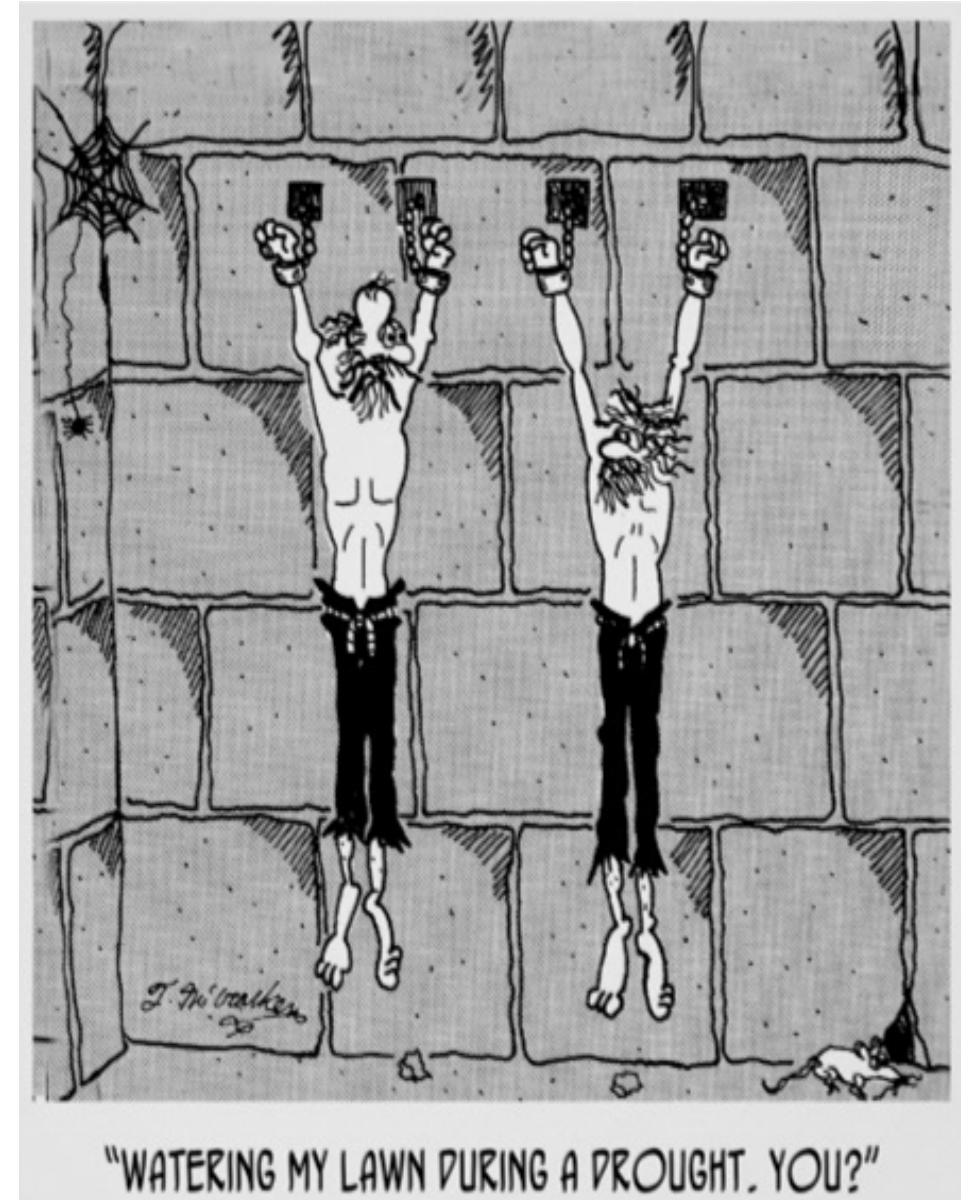
# Unique challenges

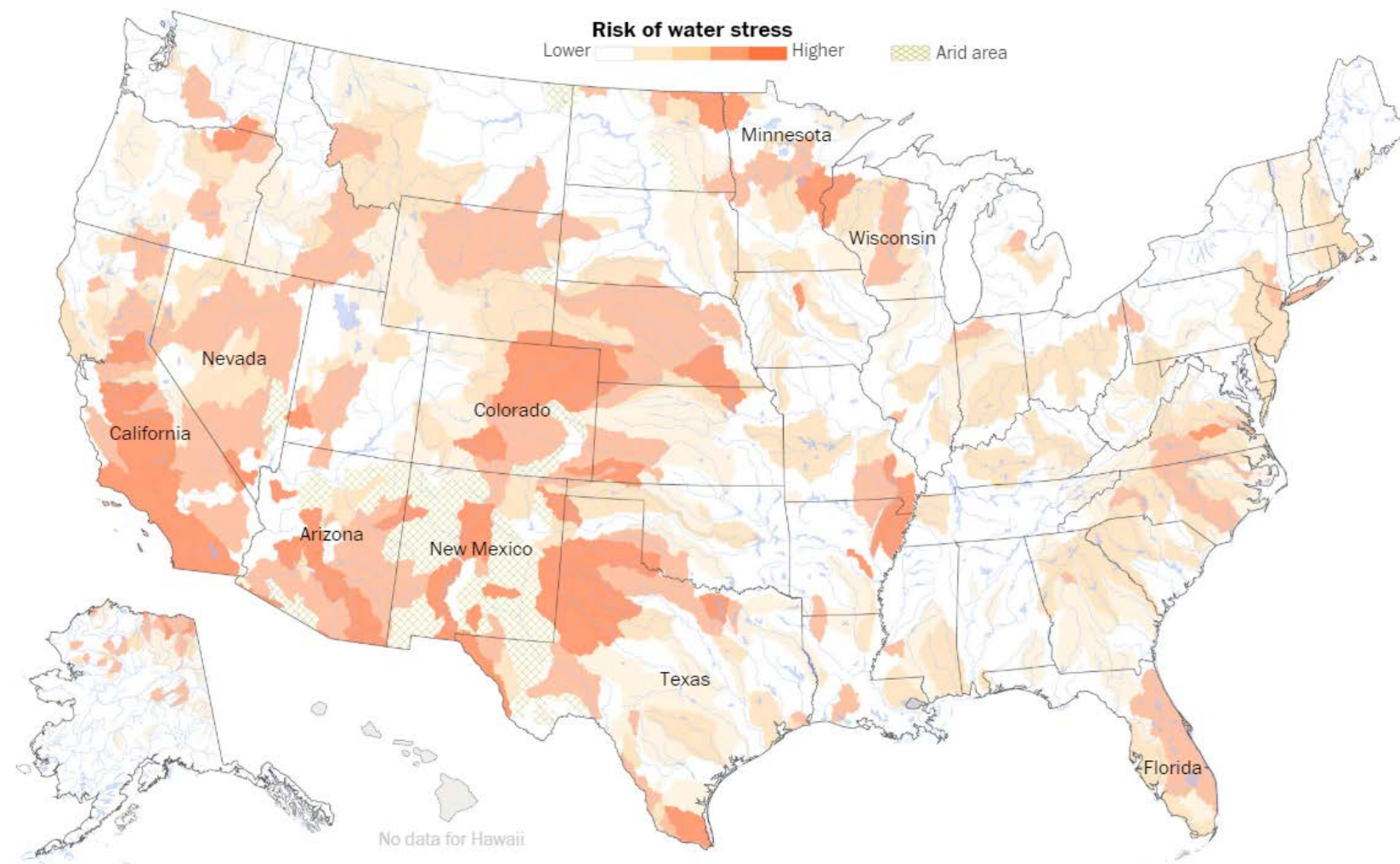
- 💧 Small customer base
  - Limited workforce
  - Evolving customer base
  - Budget / cash flow
- 💧 Deferred and accumulated maintenance needs
- 💧 Restricted rate flexibility
- 💧 Limited access to capital markets



# Water Conservation:

- ◆ Why bother?
  - Not just a means, also a tool
- ◆ Maybe, how?
  - Costs to plan, implement, administer, & maintain
- ◆ OK, what about the little guy?
  - Budget, marketing, processes, personnel, measures





# Water strain

- 💧 For many communities, there may eventually be no choice
- 💧 Within the US the push-pull for water varies greatly
- 💧 This may be the only metric in which DC's stress level ranks lowest in the country





~1980

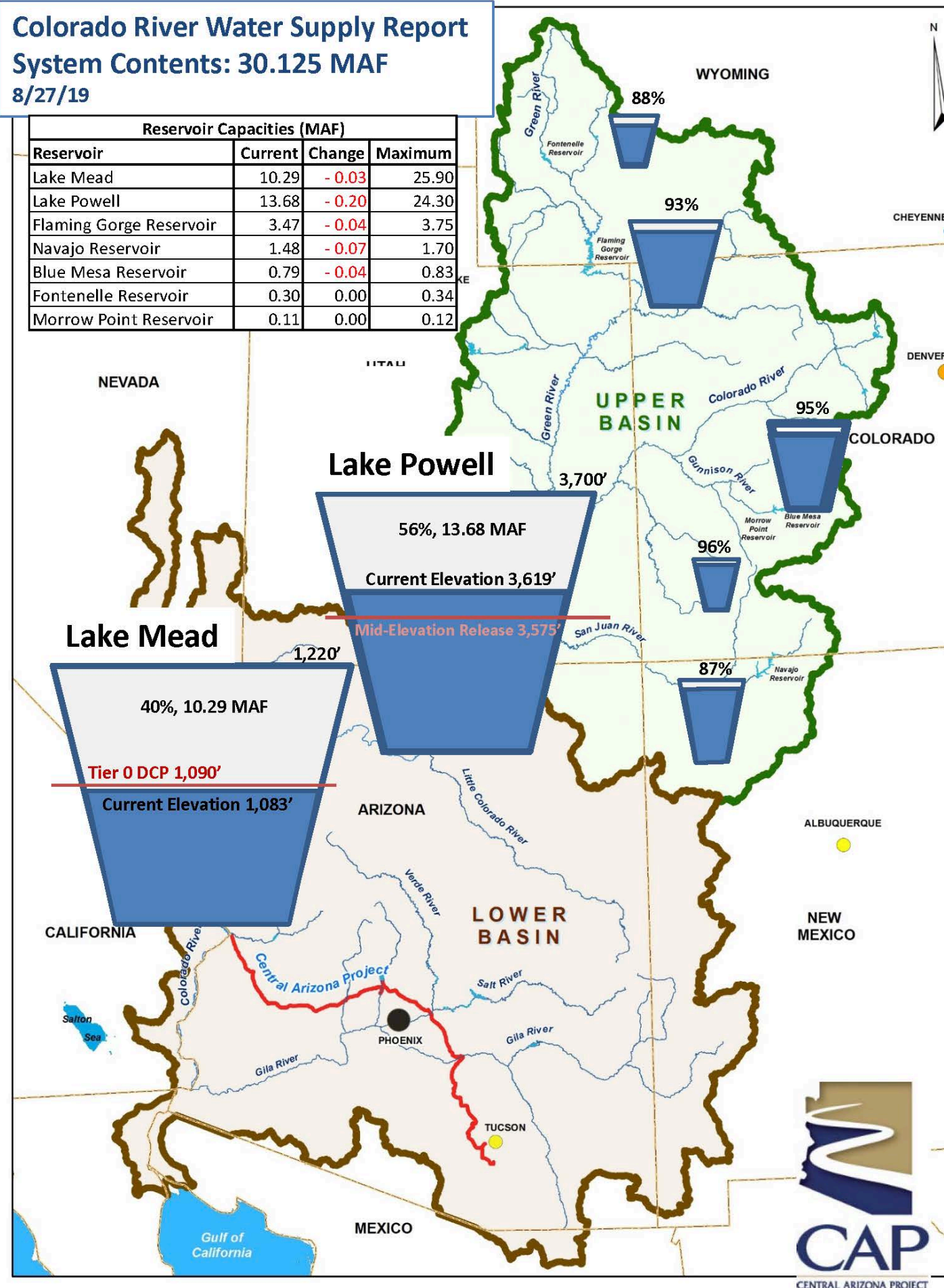
2019





**Colorado River Water Supply Report**  
**System Contents: 30.125 MAF**  
**8/27/19**

Reservoir Capacities (MAF)			
Reservoir	Current	Change	Maximum
Lake Mead	10.29	- 0.03	25.90
Lake Powell	13.68	- 0.20	24.30
Flaming Gorge Reservoir	3.47	- 0.04	3.75
Navajo Reservoir	1.48	- 0.07	1.70
Blue Mesa Reservoir	0.79	- 0.04	0.83
Fontenelle Reservoir	0.30	0.00	0.34
Morrow Point Reservoir	0.11	0.00	0.12



# Colorado River Basin

- 💧 Population served: ~40M
- 💧 Arizona's supply: ~40%
- 💧 Dependence: fringe cities



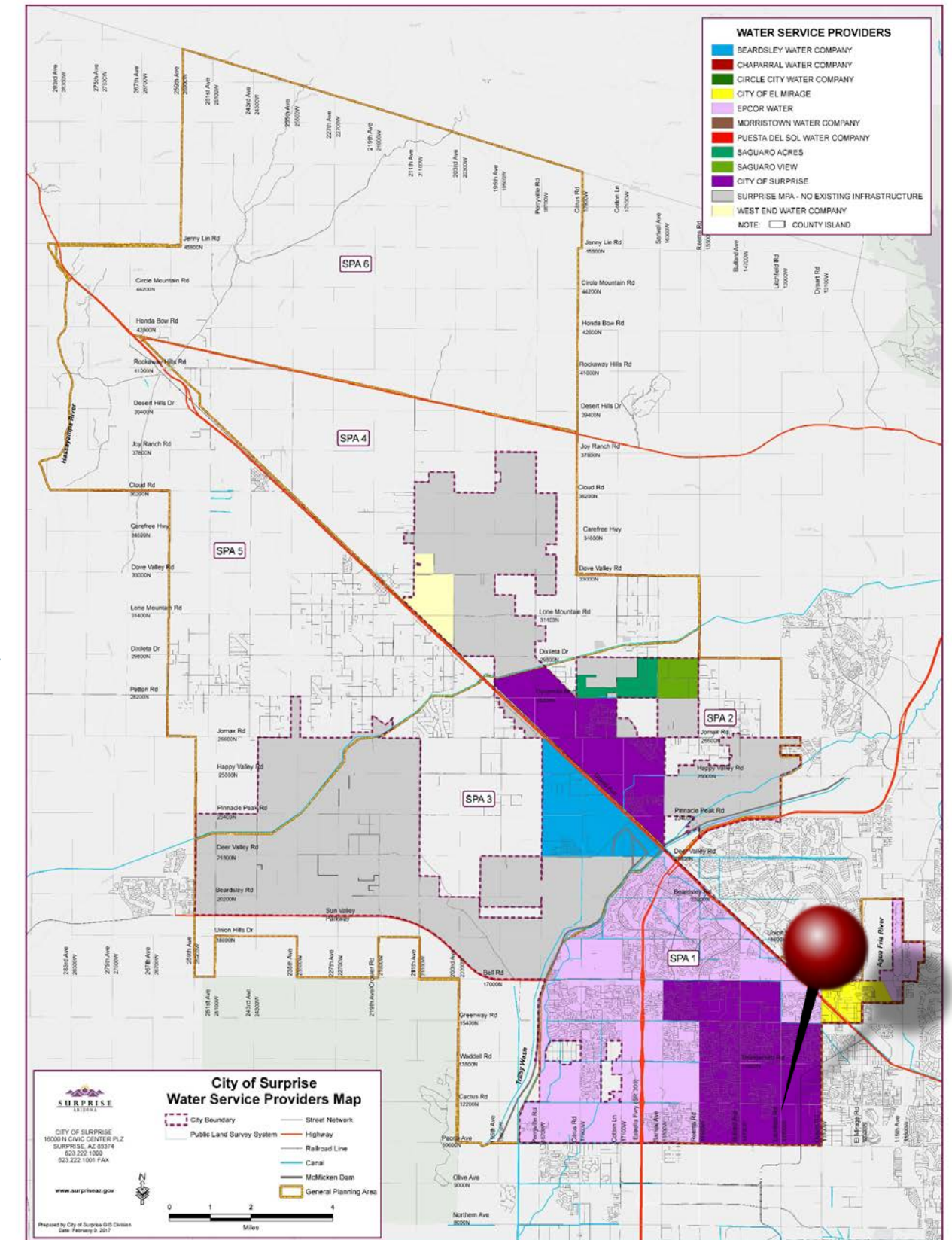
# Where in the world is Surprise, AZ?



- 💧 Population: ~140K
- 💧 Water providers: 11
- 💧 Potable water customers:  
~40K, ~16K accounts
- 💧 10,249 AF/YR CAP allocation
- 💧 Residential: 98%, growing families

Present

Future



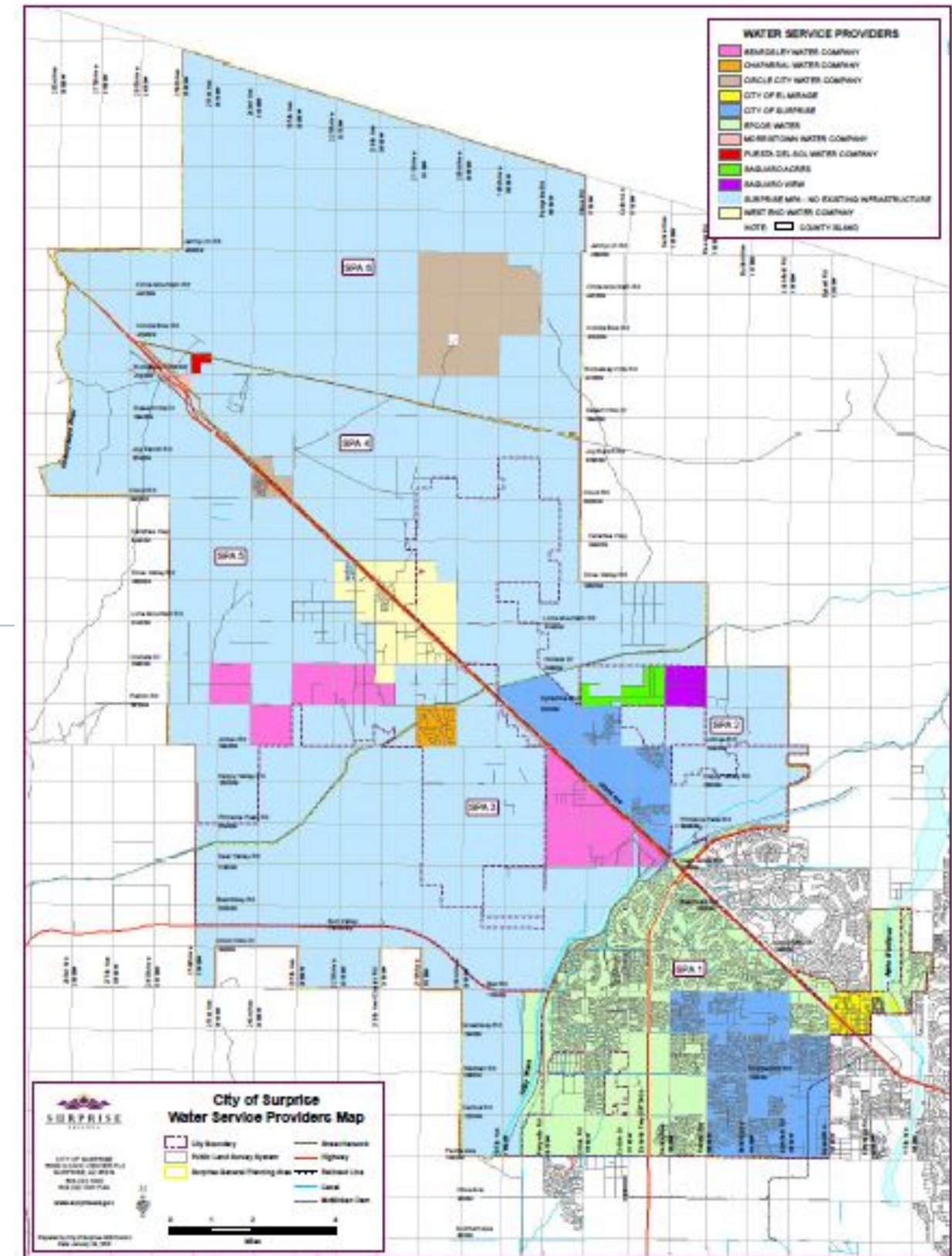


- Population: ~140K
- Water providers: 11
- Potable water customers:  
~40K, ~16K accounts
- 10,249 AF/YR CAP allocation
- Residential: 98%, growing families

Present

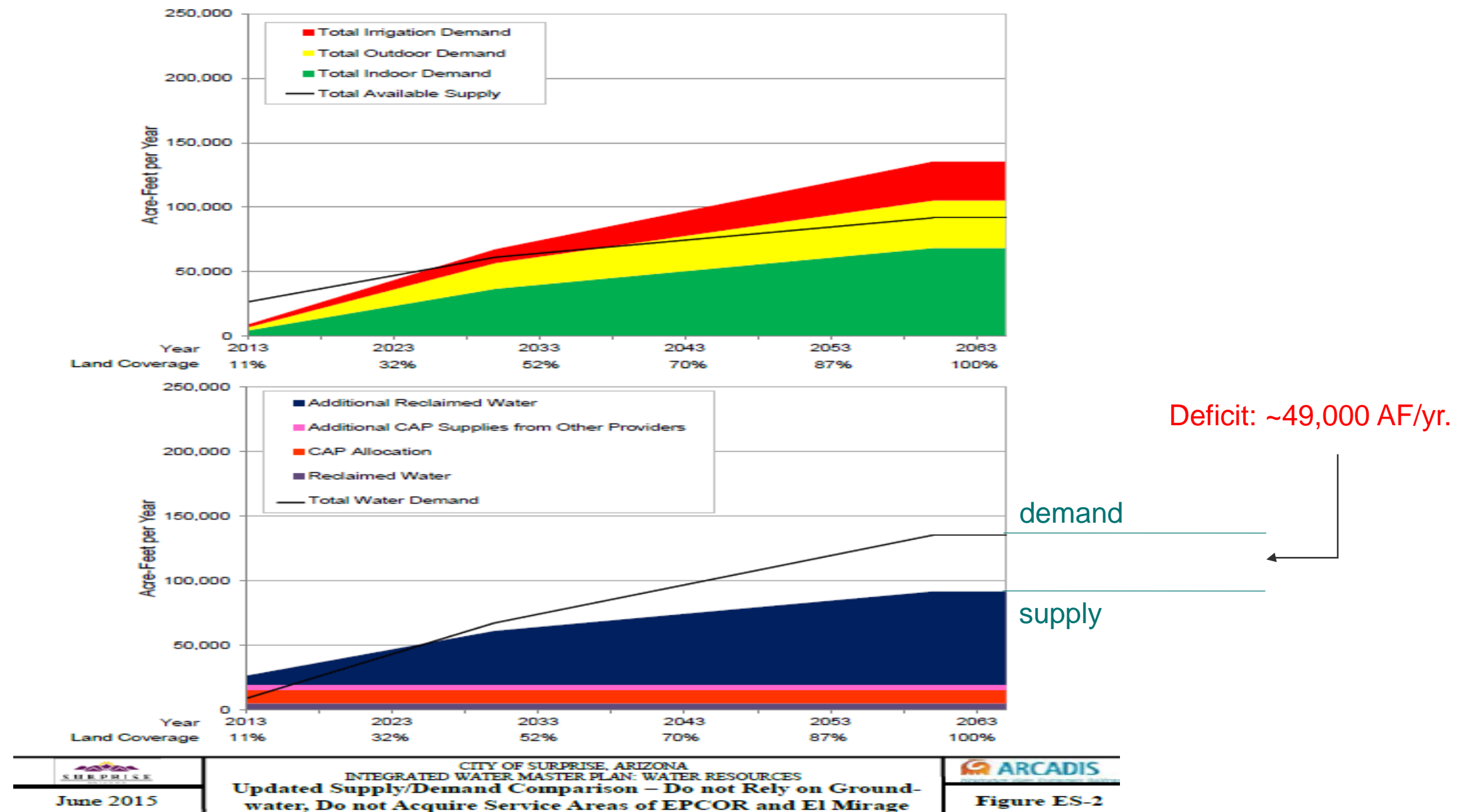
Future

- Build-out pop.: 700,000+
- Master planning areas: 6
- Build-out: 300 mi<sup>2</sup>
- Future deficit: ~49K AF/yr.
- So. Many. New developments
- Manage water supplies



# Surprise future

Facing an ~49,000 AF/yr. deficit





# How much water do we manage?



- 💧 CAP allocation: 10,249 AF/yr.
- 💧 Wastewater
- 💧 Potable water
- 💧 Stormwater
- 💧 Recharge
- 💧 Surface water: Maricopa Water District

# What we manage



- 💧 Wastewater utility
- 💧 Water utility
- 💧 Stormwater utility
- 💧 Environmental compliance

- 💧 Business management
- 💧 Construction management
- 💧 Portfolio management
- 💧 Water conservation





# Teams & collaboration



---

- 💧 Water Resource Management Staff
- 💧 Water Resource Portfolio Division
- 💧 Development Review Team
- 💧 Training & development





# Integrated Water Master Plan

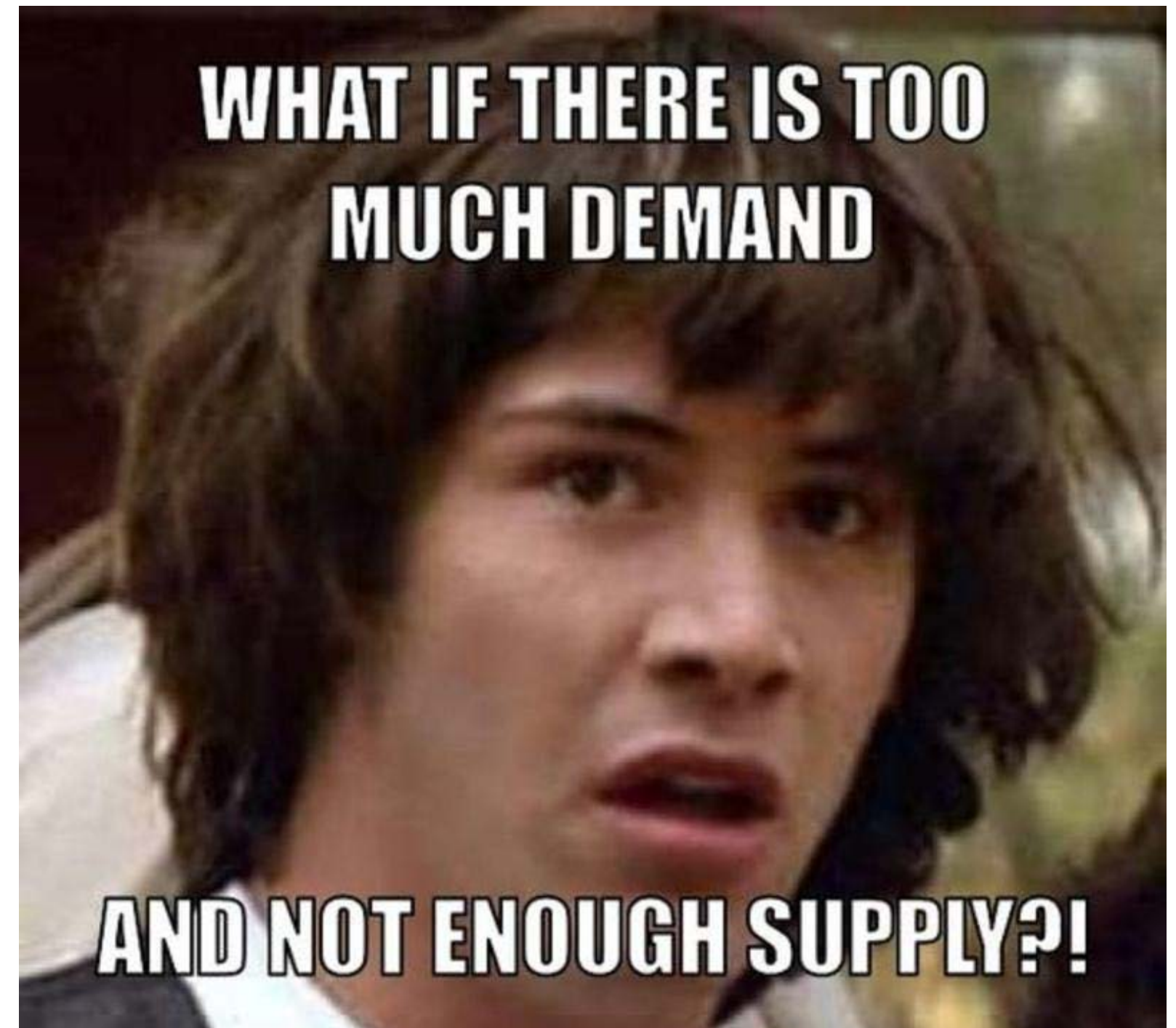
Water Resources Management					
<u>Near-Term</u>		<u>Mid-Term</u>	<u>Long-Term</u>		
<ul style="list-style-type: none"><li>• Groundwater<ul style="list-style-type: none"><li>➤ Establish area of hydrologic impact</li><li>➤ Conduct groundwater recharge and water quality</li><li>➤ Implement groundwater management</li><li>➤ Compare costs of groundwater vs. surface water treatment</li></ul></li><li>• Surface Water<ul style="list-style-type: none"><li>➤ Recharge all CAP water</li><li>➤ Pursue potential drought exemption from ADWR</li><li>➤ Compare costs of City-owned vs. regional recharge facilities</li><li>➤ Encourage continued urban irrigation with MWD surface water</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Reclaimed Water<ul style="list-style-type: none"><li>➤ Recharge all excess reclaimed water</li><li>➤ Update long range plan for reclaimed water infrastructure</li><li>➤ Identify potential direct reuse customers</li><li>➤ Develop City-owned recharge facilities for reclaimed water</li><li>➤ Pursue GSF permits for reclaimed water delivered to farms</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Investigate potential to acquire private water company CAP allocations</li><li>• Monitor proposals for water importation from the Colorado River</li><li>• Evaluate feasibility of accessing poor quality groundwater</li></ul>	<ul style="list-style-type: none"><li>• Participate in regional water supply development discussions</li><li>• “Fill out” water portfolio with additional resources to achieve true water resources sustainability</li></ul>		
Assured Water Supply					
<u>Groundwater</u>		<u>Surface Water</u>	<u>Reclaimed Water</u>	<u>Water Conservation</u>	
<ul style="list-style-type: none"><li>• Maximize physical availability</li><li>• Acquire credits for extinguished groundwater rights</li><li>• Increase portfolio of long-term storage and extinguishment credits</li></ul>	<ul style="list-style-type: none"><li>• Account for pumped groundwater as recovered credits</li><li>• Explore alternative water accounting</li><li>• Explore opportunities for water exchanges and purchases</li></ul>	<ul style="list-style-type: none"><li>• Maximize physical availability</li><li>• Document MWD supply for urban irrigation</li></ul>	<ul style="list-style-type: none"><li>• Maximize physical availability</li><li>• Document direct reuse facilities and demands</li></ul>	<ul style="list-style-type: none"><li>• Document existing water conservation program</li><li>• Develop formal water conservation plan</li></ul>	
		CITY OF SURPRISE, ARIZONA INTEGRATED WATER MASTER PLAN: WATER RESOURCES			
June 2015		Recommended Water Resources Management and Assured Water Supply Strategies			Figure ES-3



# Surprise Water Resource Management

---

- 💧 Integrated Water Master Plan
- 💧 Community Drought Plan
- 💧 Development Team



# Regional planning & participation

Board of Directors

Planning Committee

Water Quality Advisory Committee

Basin Study Adaptation Subcommittee



Water Committee



Recovery Planning Advisory Group



Management Plans Workgroup



Advisory Council



# Surprise Resources

---



# Our partnerships



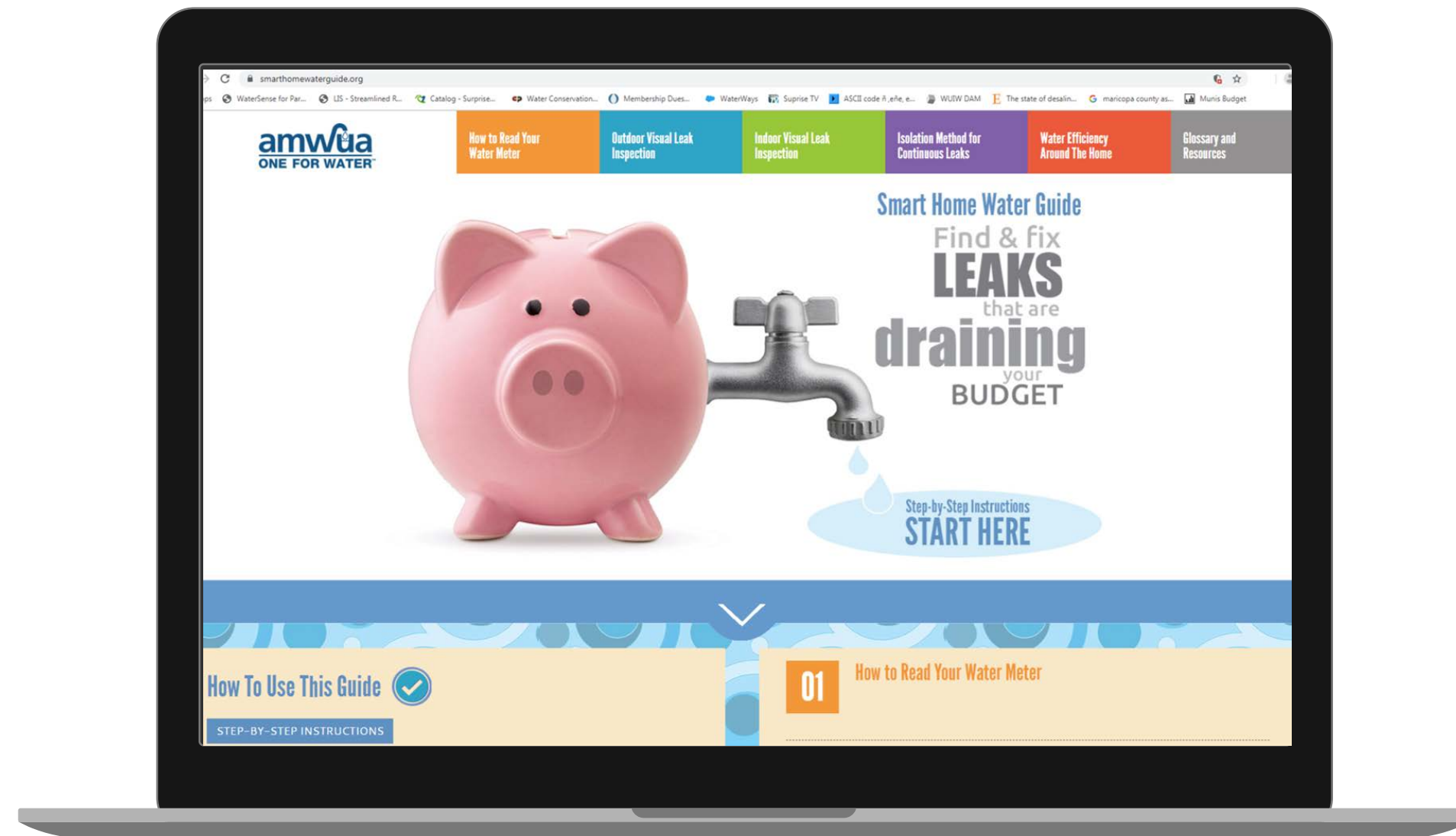




# InfoShare

Arizona Water Conservation Information Sharing Meeting

- 💧 Meets 2-4 times per year
- 💧 Networking
- 💧 Vendors
- 💧 Roundtable discussions
- 💧 Tours



# Finding leaks resource

- 💧 Free: [smarthomewaterguide.org](https://smarthomewaterguide.org)
- 💧 Step-by-step home water guide
- 💧 Indoor & outdoor checks
- 💧 Check pool equipment
- 💧 Landscape irrigation checks
- 💧 Isolation and visual leak inspections





Water  
conservation  
program



# Water conservation program management

- 💧 Water Conservation Staff: 1 FTE
- 💧 Many programs, much tracking
- 💧 Spreadsheets, so many spreadsheets



# Water conservation programs

- 💧 Adult education
- 💧 Youth education
- 💧 Messaging
- 💧 Rebates
- 💧 Xeriscape demonstration garden





# Adult education

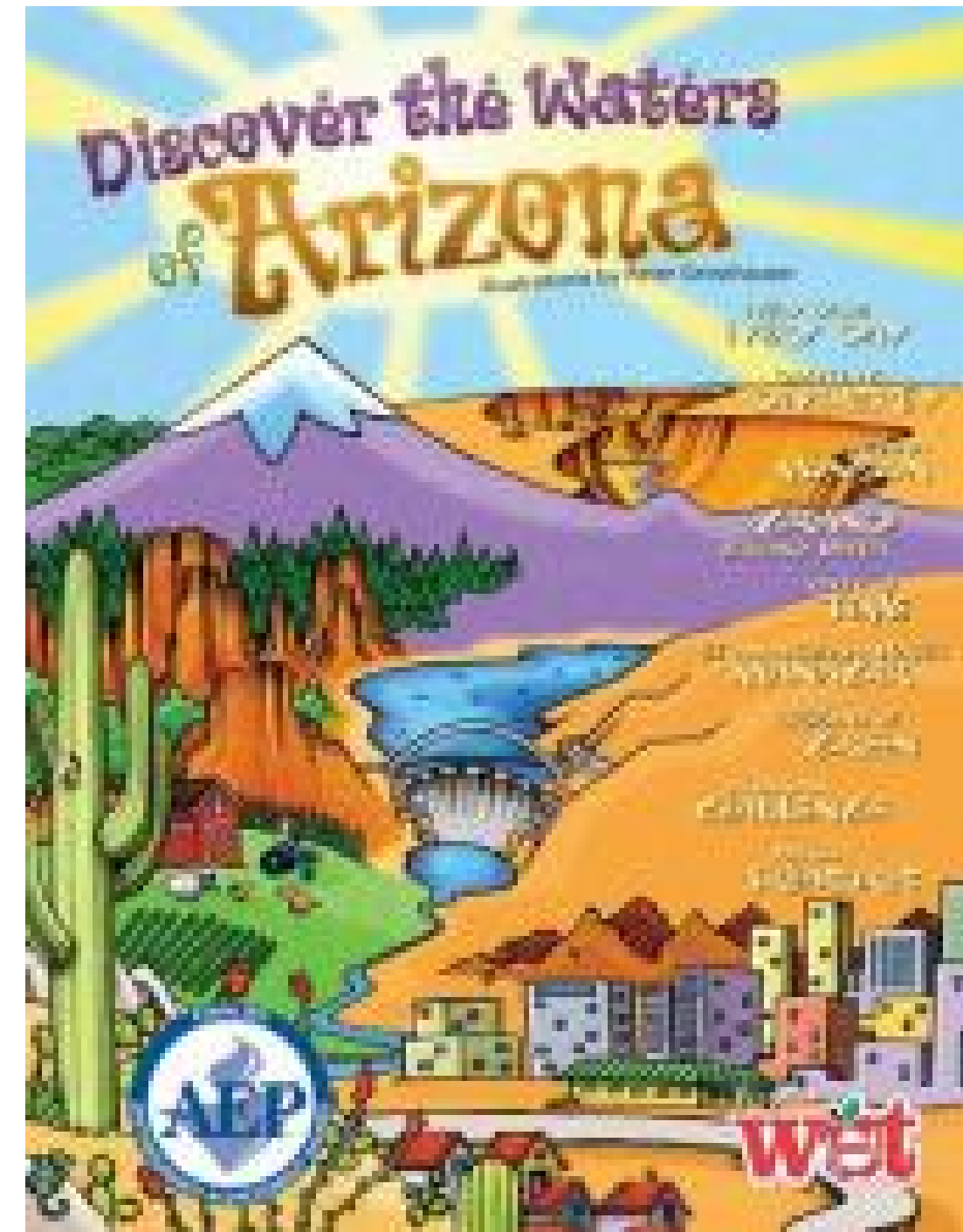


- 💧 Landscape & water efficiency
- 💧 HOA Academy
- 💧 Master Gardeners
- 💧 Contractors
- 💧 Staff
- 💧 Partners
- 💧 Staff training



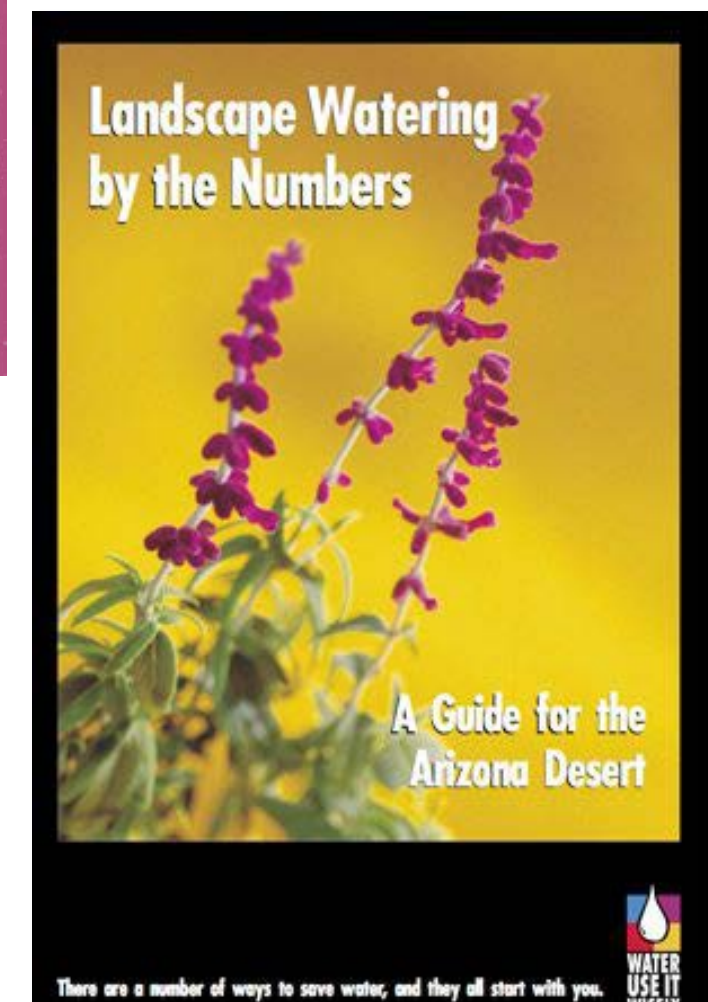
# Youth education K-12

- Menu of options:
  - Classroom presentations
  - booklets
- Contractors & staff
- Partner collaborations
- Staff training



# Messaging: Water – Use It Wisely

- 💧 Collaboration
- 💧 Resource hub
- 💧 Messaging creative
- 💧 TV & radio spots
- 💧 Social media
- 💧 Events
- 💧 Publications





# Messaging outlets

---

- 💧 Social media: share, like, etc.
- 💧 Movie theatre PSAs
- 💧 Local newspaper articles
- 💧 Other departments:
  - Community Development (landscape reviews)
  - Human Services (HOA academy)
  - Communication (Channel 11, City magazine)
  - Utility Billing (staff training & billing messages)







# Outreach events

- 💧 Partner collaborations
- 💧 Staff from other areas
- 💧 Un-staffed events
- 💧 Contribute resources
- 💧 Special events





# Rebates

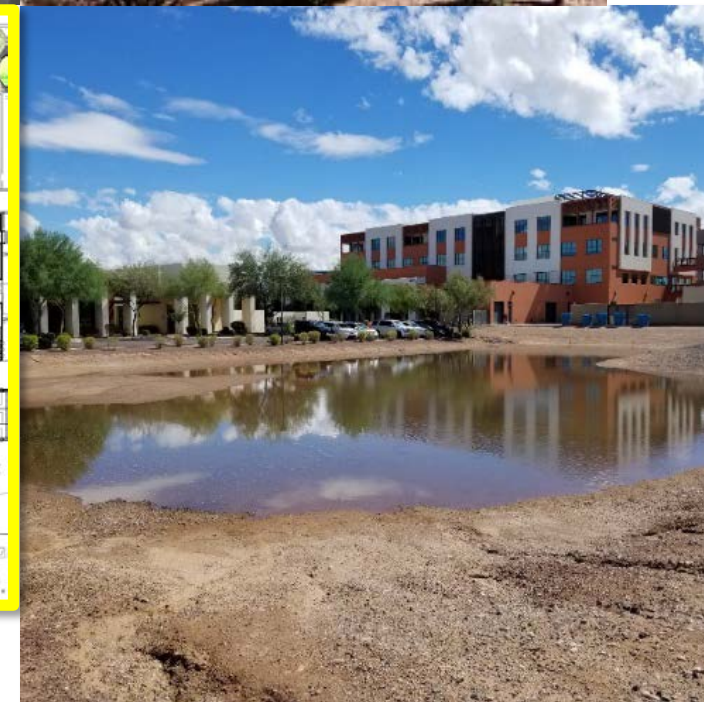
---

- Tailored to customer base
- Focus on reducing outdoor water use
- Include education components (inspection)
- Current:
  - Smart irrigation controller (WaterSense)
  - New home Xeriscape installation
  - Commercial/HOA turf removal



# Xeriscape demonstration garden at City Hall

- 💧 Right plant, right place
- 💧 Efficient irrigation technology
- 💧 Passive rainwater harvesting
- 💧 Active water harvesting (cooling tower condensate, Low Impact Development)
- 💧 On-site classes & tours
- 💧 Funding: grants, community partnerships







# Transformation

# Hopeful







# Workshop program management: registration

---

- 💧 Advertises classes
- 💧 Tracks registrants
- 💧 New workshop notification
- 💧 Email reminders





# Workshop program management: survey

---

- 💧 Free to use
- 💧 Tracks attendees
- 💧 Provides links to resources
- 💧 Ask for:
  - Future class notifications
  - Water – Use It Wisely subscriptions
  - Social media follow

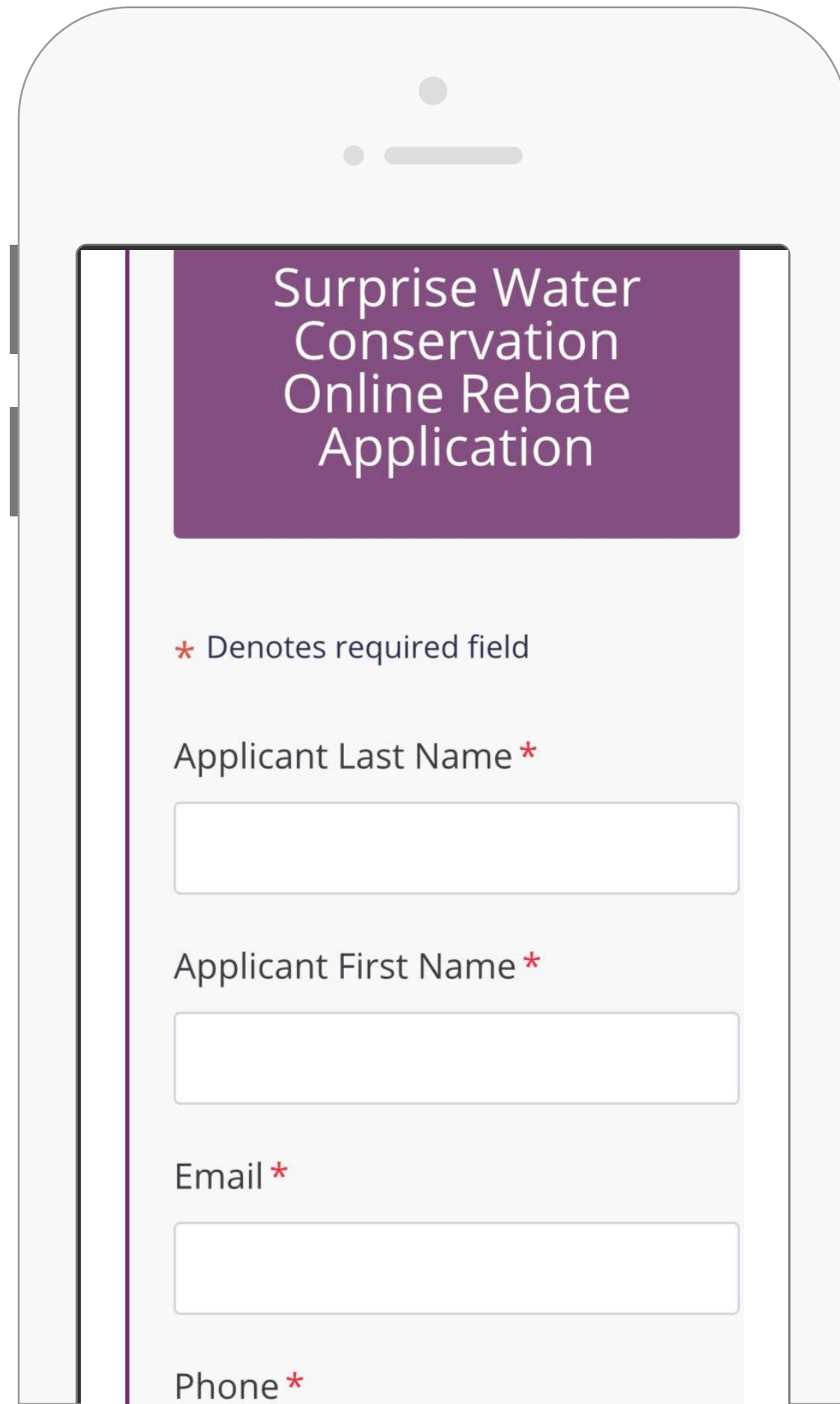
# Rebate program management: tracking

- 💧 Funds
- 💧 Applications received/processed
- 💧 Status
- 💧 reporting



**WATERWAYS®**



A mobile application interface for a water conservation rebate application. The app is displayed on a light gray smartphone frame. At the top, a purple header bar contains the title "Surprise Water Conservation Online Rebate Application" in white text. Below the header, a red asterisk icon is followed by the text "Denotes required field". The form consists of four input fields, each with a label and a red asterisk: "Applicant Last Name", "Applicant First Name", "Email", and "Phone". Each label is positioned to the left of its corresponding white input box with a thin gray border. The "Applicant Last Name" field is the first, followed by "Applicant First Name", then "Email", and finally "Phone" at the bottom.

Surprise Water Conservation Online Rebate Application

\* Denotes required field

Applicant Last Name \*

Applicant First Name \*

Email \*

Phone \*

## Online application

- 💧 Easy to use mobile responsive application
- 💧 Emails submission notification to customer & staff
- 💧 So far, paper-free (paper application available upon request)

# Dashboard

- 💧 Real-time updates
- 💧 Rebates processed, pending
- 💧 Funds expended, remaining
- 💧 Gallons saved
- 💧 Reporting ease





# Summary

- 💧 Don't reinvent the wheel
- 💧 Streamline
- 💧 Hire contractors
- 💧 Look for freebies
- 💧 Learn to wear many hats
- 💧 Be nimble
- 💧 Share
- 💧 Collaborate, collaborate, collaborate!



# Questions or Comments?

Jennifer Davidson

[jennifer.davidson@surpriseaz.gov](mailto:jennifer.davidson@surpriseaz.gov)

623.222.7135

Ian Johnston

[ijohnston@aiqueous.com](mailto:ijohnston@aiqueous.com)

917.620.8562

