



# Adapting to Change: Declining Flows and the Impacts of Wastewater Quality on AWT Facilities

December 6, 2019



# CUWA is a leading voice of CA urban water

Population Served **26 million**

## **Retail Agencies:**

- Alameda County Water District (ACWD)
- East Bay Municipal Utility District (EBMUD)
- Los Angeles Department of Water and Power (LADWP)
- City of Fresno

## **Retail/Wholesale Agencies:**

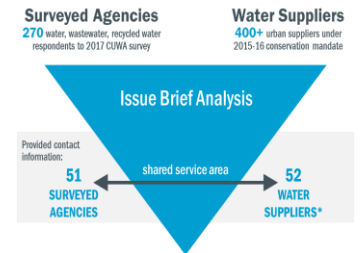
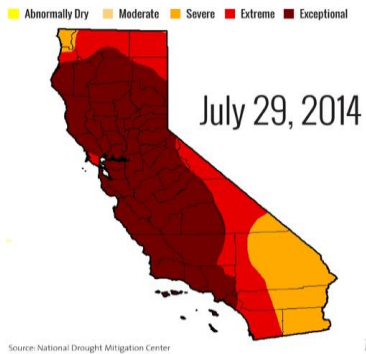
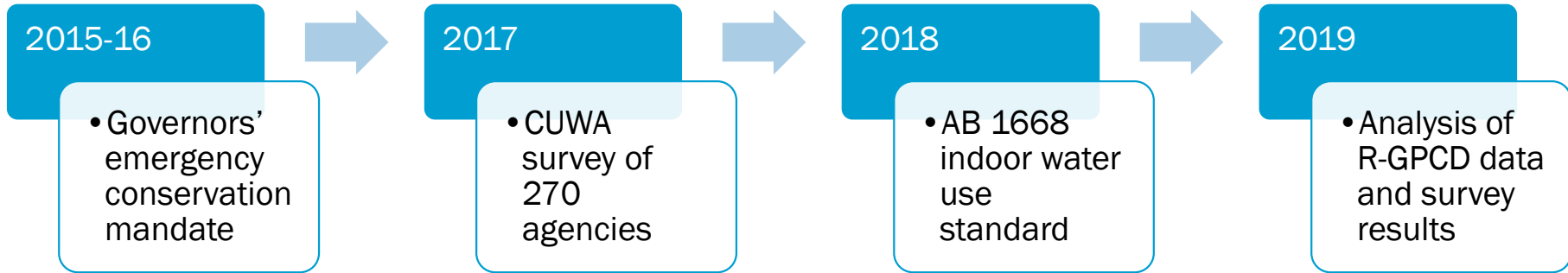
- Contra Costa Water District (CCWD)
- City of San Diego (San Diego)
- San Francisco Public Utilities Commission (SFPUC)

## **Wholesale Agencies:**

- Metropolitan Water District of Southern California (MWDSC)
- Santa Clara Valley Water District (SCVWD)
- San Diego County Water Authority (SDCWA)
- Zone 7 Water Agency (Zone 7)



# Timeline



# In 2015, Governor issued emergency conservation Executive Order

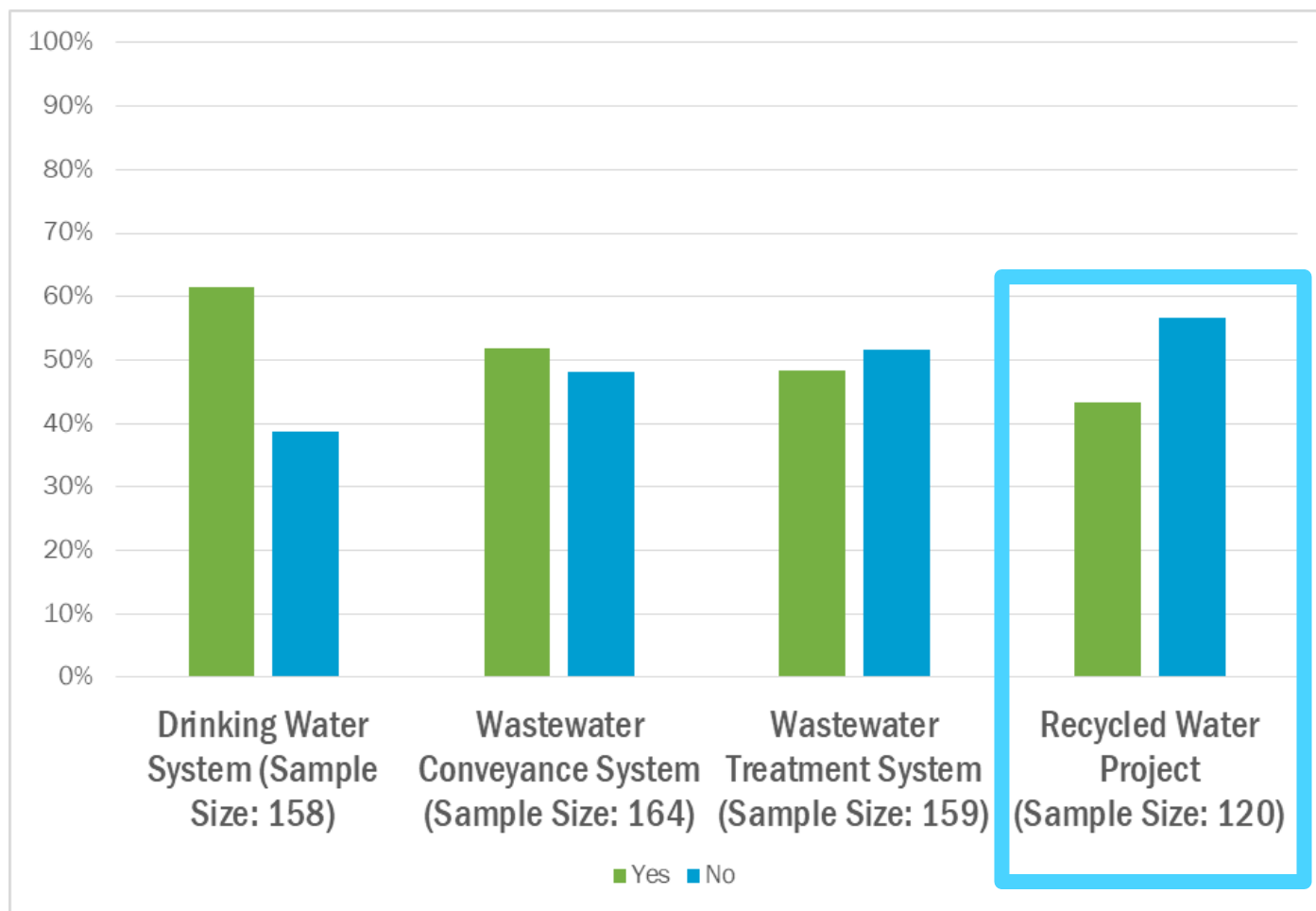
- Californians **reduced water use by an average of 25%** during the 2015-16 drought.
- Significant reduction in water demands **revealed some impacts** from declining flows.
- Observations **offer a preview** into the potential impact of establishing permanent indoor water use targets.

■ Abnormally Dry ■ Moderate ■ Severe ■ Extreme ■ Exceptional



Source: National Drought Mitigation Center

# In 2017, half of CUWA survey respondents reported impacts from drought declining flows



# In 2018, the State enacted legislation that set a provisional standard for indoor water use



*California*  
LEGISLATIVE INFORMATION

Assembly Bill No. 1668



Defines the current interim standard as **55 R-GPCD**

Standard may reduce to as low as **50 R-GPCD** in 2030

Requires **studies by DWR and State Board** to analyze how the changing standard will impact water and wastewater management

# In 2019, CUWA revisited 2017 survey to examine relationship between water use and impacts

## Surveyed Agencies

**270** water, wastewater, recycled water respondents to 2017 CUWA survey

## Water Suppliers

**400+** urban suppliers under 2015-16 conservation mandate

### Issue Brief Analysis

Provided contact information:

**51**

**SURVEYED  
AGENCIES**

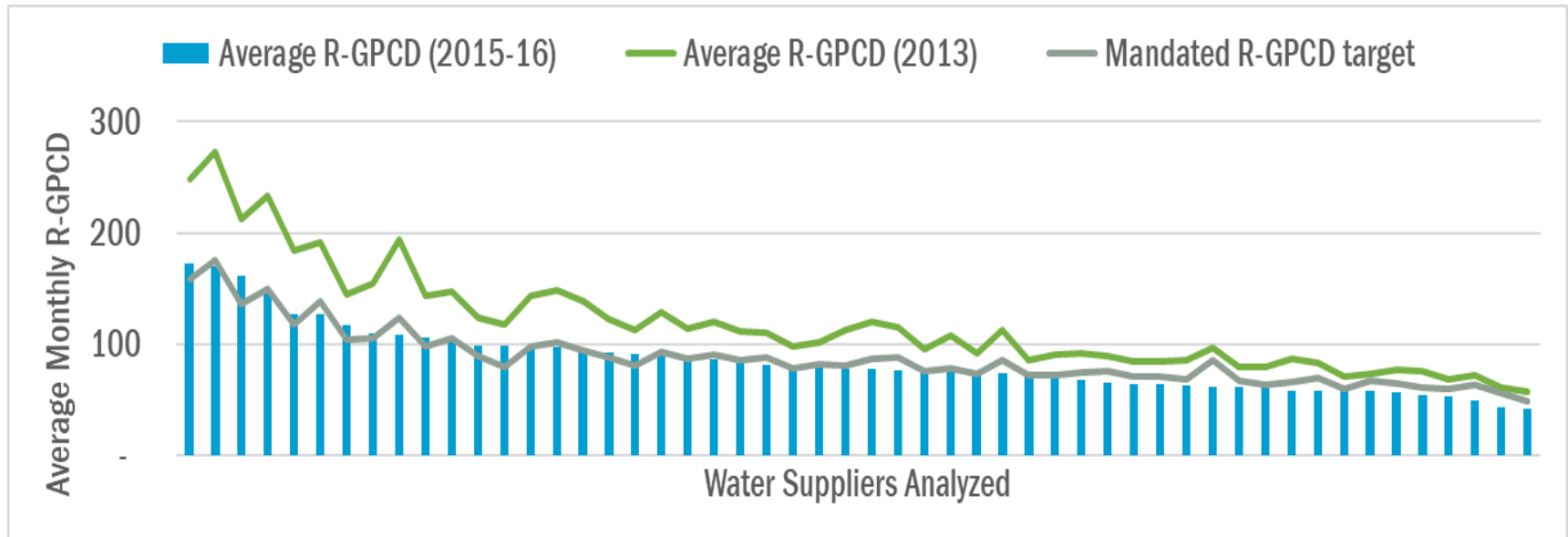
shared service area

**52**

**WATER  
SUPPLIERS\***

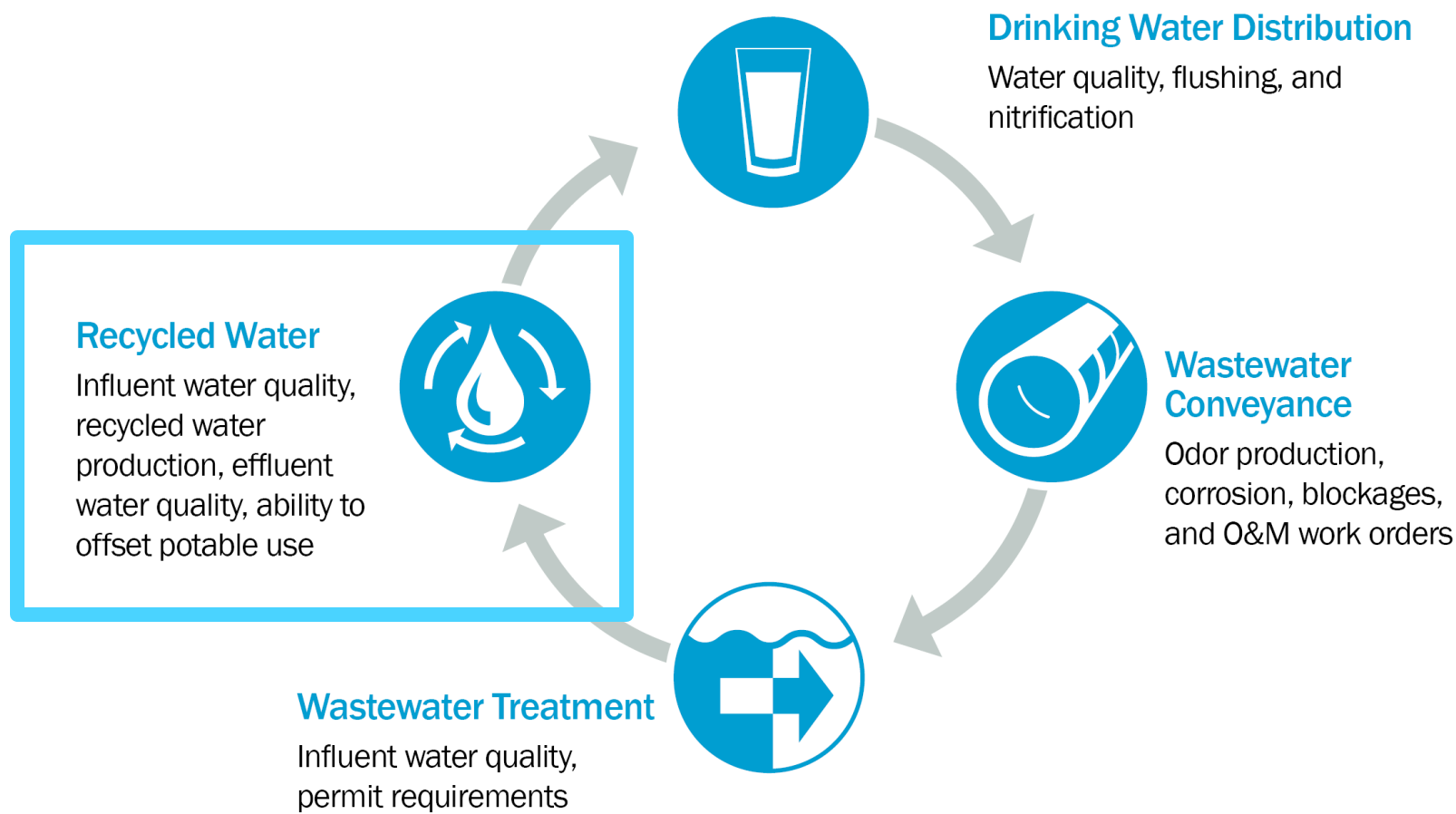


# Water use of analyzed suppliers aligned with the State's drought emergency goals

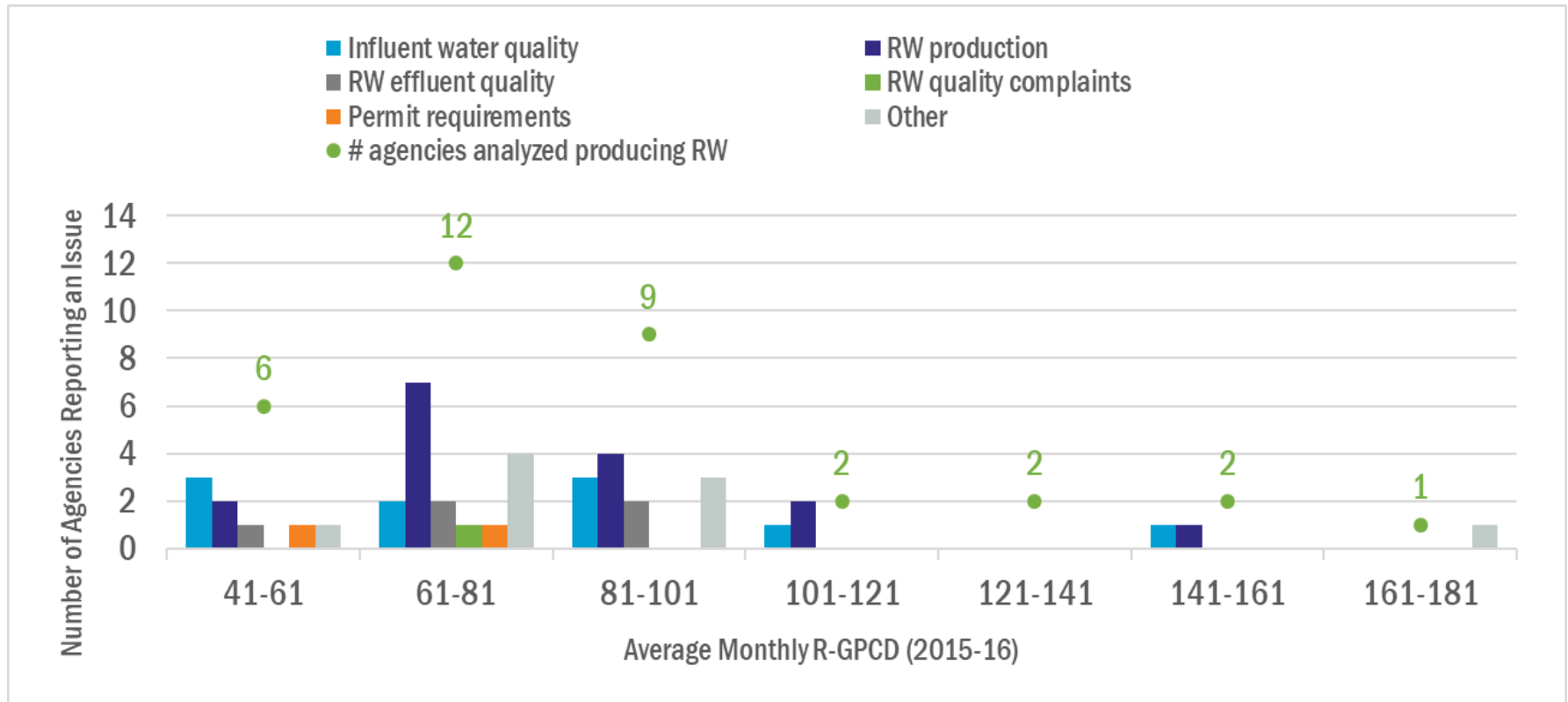




# Research shows declining flows have impacts on the interconnected urban water cycle



# Impacts on recycled water systems include changes in production and water quality



# OCSD & OCWD have invested \$60M to segregate high-salinity influent flows

## Orange County Sanitation District & Orange County Water District



### Background:

- 2.6 million people
- 2 wastewater treatment plants
- 100 mgd of highly purified water

### Impacts Experienced:

- Reduced flows at the WWTPs
- Increasing salinity from discharge effluent from upstream utilities

### Adaptation Strategies & Financial Impacts:

- Supplementing GW replenishment system feed water flows with Plant 2 effluent
- Investing \$60 million to segregate non-reclaimable, high-salinity flows

# Insufficient wastewater flow could limit San Diego's ability to meet Pure Water goals

## City of San Diego

### Background:

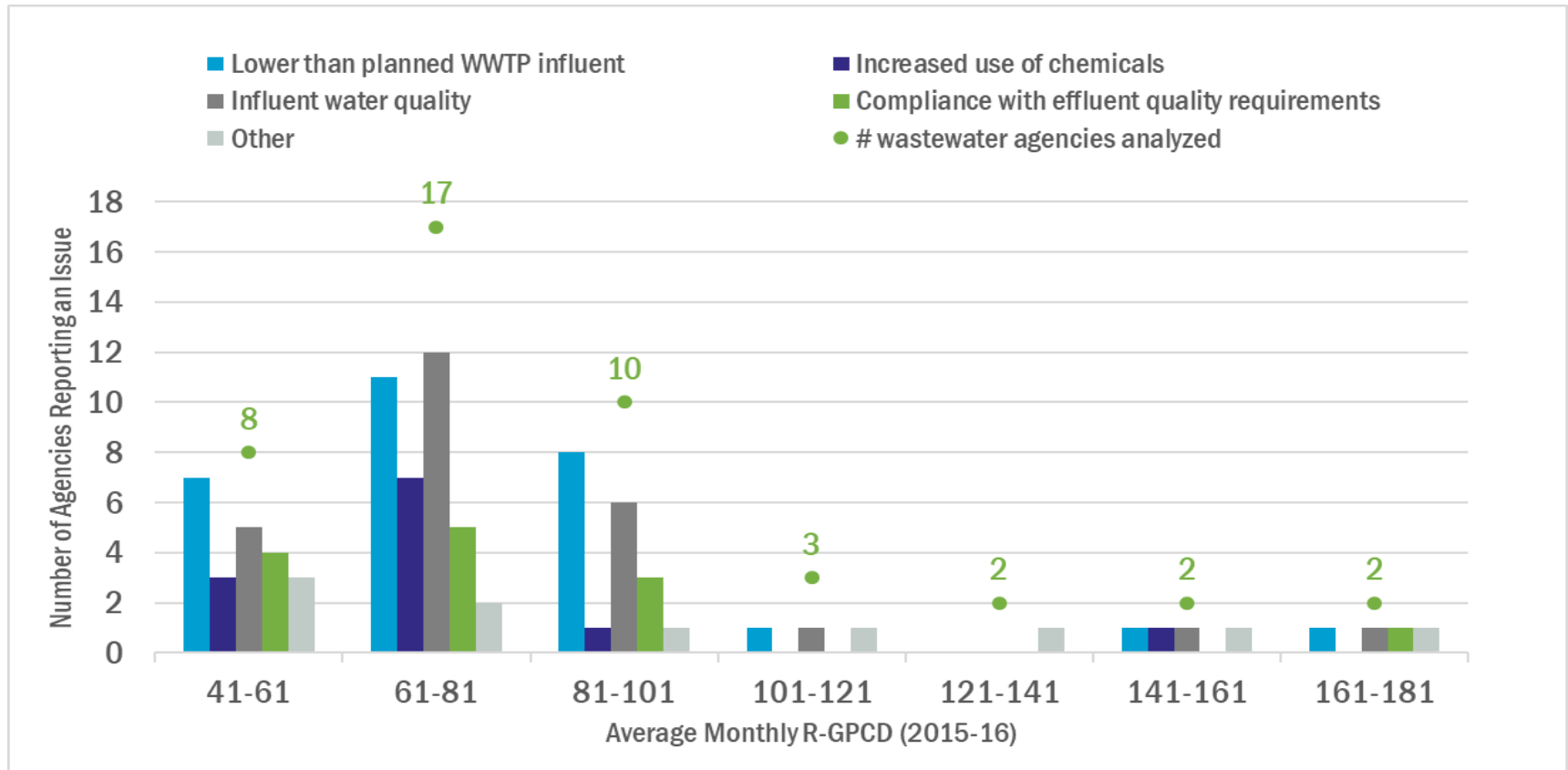
- 1.3 million water customers
- 2.4 million wastewater customers
- 3 wastewater treatment plants
- Multi-phased recycled water program to ultimately provide 83 mgd of pure water



### Potential Impacts:

- Insufficient influent flow into the wastewater treatment plant
  - limit ability to meet supply goals and commitments
  - partially strand new asset
  - reduce regional drought resilience capabilities

# Lower than expected wastewater flows led to impacts on wastewater treatment systems



# Victor Valley adjusted treatment operations to address increased ammonia concentrations

## Victor Valley Water Reclamation Authority (Wastewater Treatment)



### Impacts Experienced:

- Increased ammonia concentrations in wastewater influent
- Declining wastewater influent reduces recycled water volumes

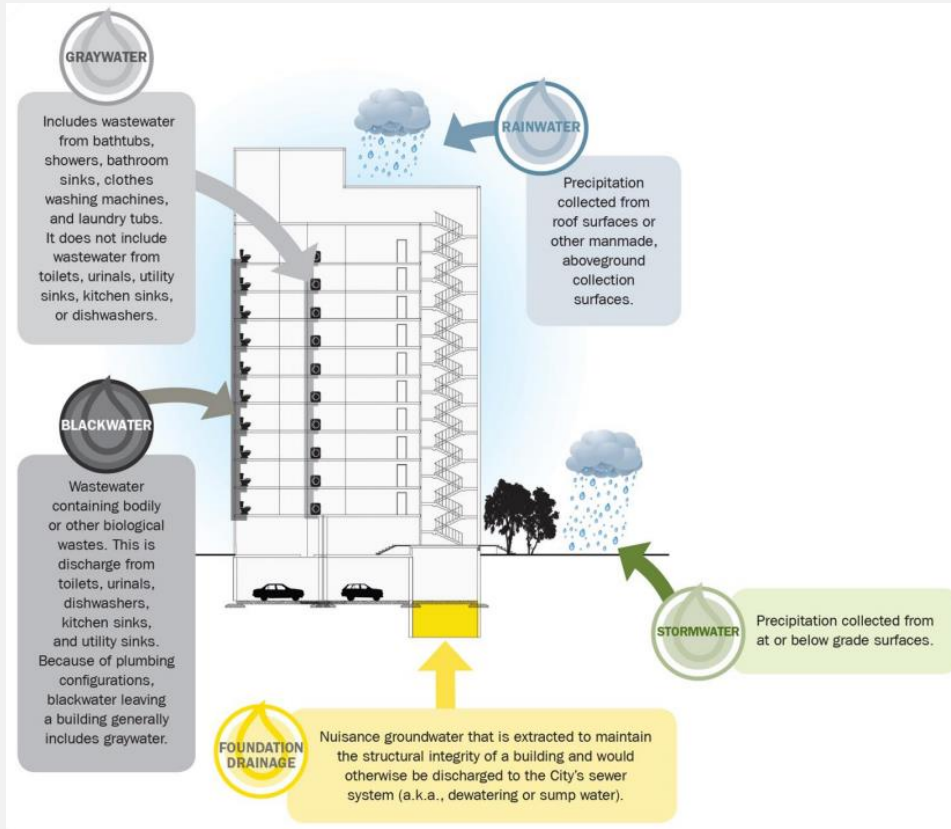
### Adaptation Strategies & Financial Impacts:

- Changed operations of the aeration basins to achieve the appropriate nitrification and denitrification
- Less recycled water available for reuse increases reliance on potable resources (groundwater)



# SFPUC invests in proactive planning for Citywide onsite reuse program

## San Francisco Public Utilities Commission



### Summary:

- Extensive modeling and application of tools to ensure no negative impacts of reduced flow
- Partnership and collaboration between departments to identify and support operational and business needs
- Proactive planning with external stakeholders, including developers

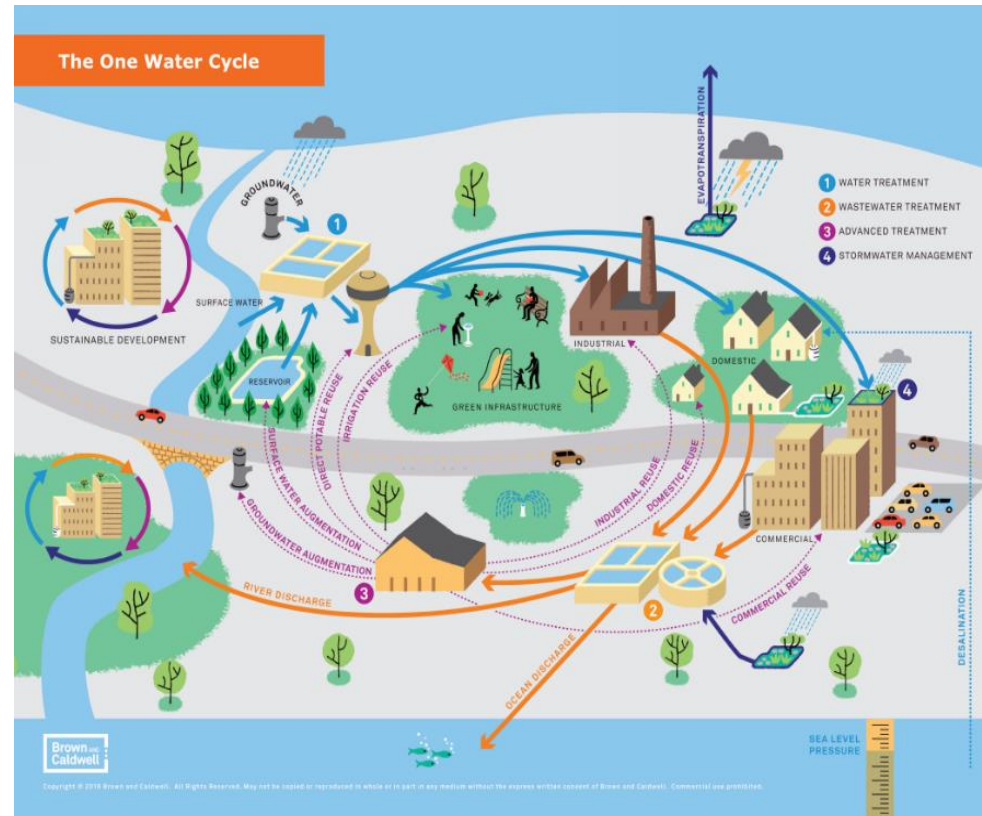


# *Key Takeaways and Recommendations*



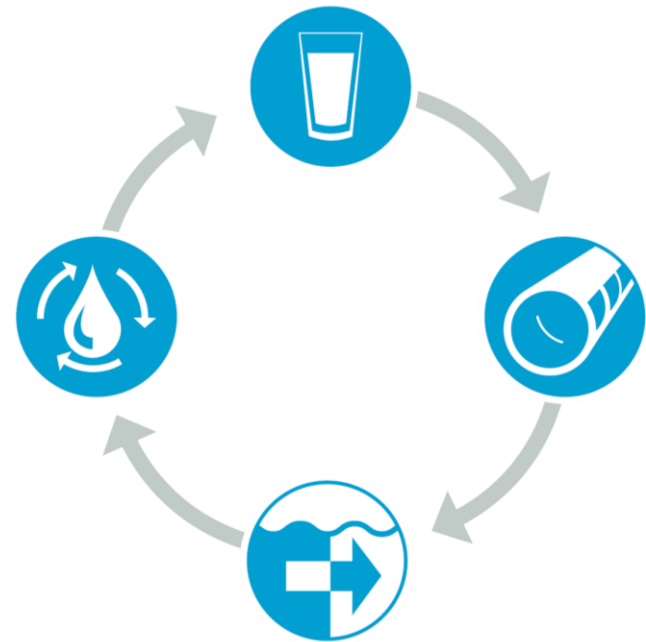
# A wide range of water and wastewater systems experienced impacts from reduced flows

- Reported issues carry direct and indirect operational, financial, and physical consequences.
- Many challenges are caused by a combination of system-specific characteristics.
- **This makes it difficult to define a specific R-GPCD threshold that triggers impacts.**



# Systems with large, unexpected flow reductions may experience significant operational challenges

- Water demands supporting the basis of designs have changed.
- Large reductions in flow may lead to systems operational well below design capacity.
- **Systems designed with greater flexibility may have more of an ability to adapt.**



# Given time and resources, utilities can and will adapt to declining flows

- Agencies need time, investment, and coordinated planning across the service area to adjust.
- They are sometimes adjusting to competing goals.
- **This emphasizes the importance of a holistic, integrated, One Water planning and management approach.**



# Working together to inform water use efficiency requirements – recommendations

## Actions for the State

- ✓ Account for system-specific characteristics when evaluating appropriate indoor water use standards.
- ✓ Ensure that state policies for water use efficiency and reuse are complementary.

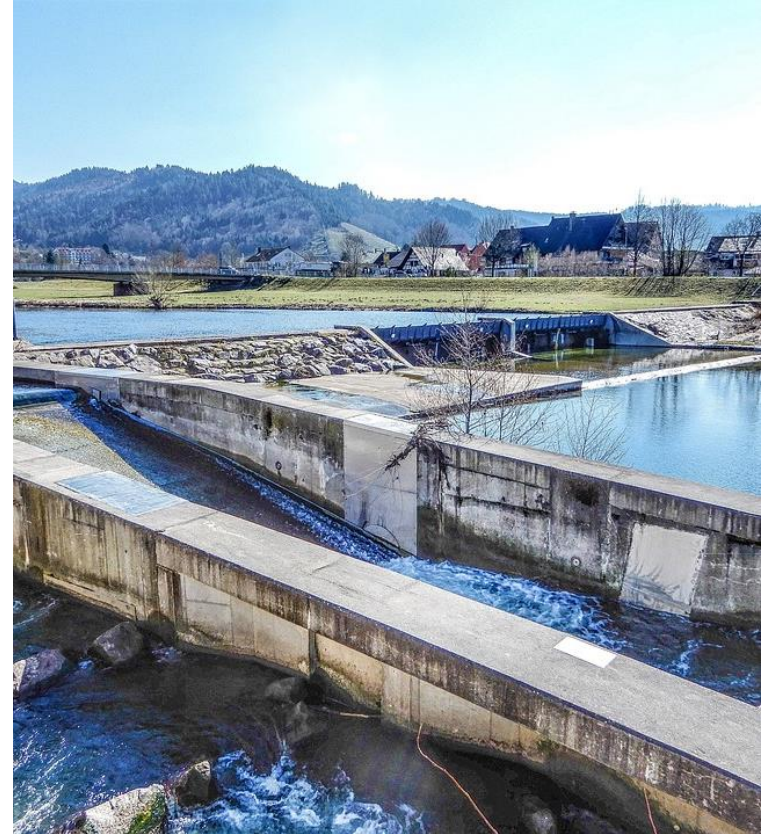




# Working together to inform water use efficiency requirements – recommendations

## Actions for utilities

- ✓ Strengthen planning, coordination, and collaboration between water and wastewater agencies.
- ✓ Assess vulnerabilities and potential impacts throughout the system.



# Questions?

*The 2019 Issue Brief and 2017 White Paper are available for download at the CUWA website ([www.cuwa.org](http://www.cuwa.org)).*

**Brown** AND  
**Caldwell**



CALIFORNIA URBAN WATER AGENCIES