

Managing Wastewater in a Changing Climate

April 22, 2019

Caitrin Chappelle

Research supported by the California Association of Sanitation Agencies, the S. D. Bechtel, Jr. Foundation, and the US Environmental Protection Agency



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California's wastewater sector is at a turning point

- Wastewater management helps protect public health and the environment, is source for recycled water
- Shifts in policies, better planning can help sector prepare for drought, changing water demands, climate change
- New report based on first-hand information from agencies
 - Surveyed wastewater managers on experiences before, during, after latest drought (133 responses)
 - Focus groups with local and state agencies helped define challenges, innovations

Drought and changing climate complicate wastewater management

- Reduced indoor water use reduces volumes into treatment plants
- Shifts to alternative water sources can affect influent quality
- Lower flows, higher temperatures in rivers and streams will further stress ecosystems that depend on treated wastewater
- More “atmospheric rivers” will increase flood risk to treatment plants, bring unplanned spills
- Sea level rise will affect wastewater treatment plants on the coast

A shift is needed in how we manage wastewater



Key Challenges:

- Maintaining water quality in the face of reduced indoor water use
- Making smart recycled water investments
- Balancing conflicting objectives within watersheds

Outline

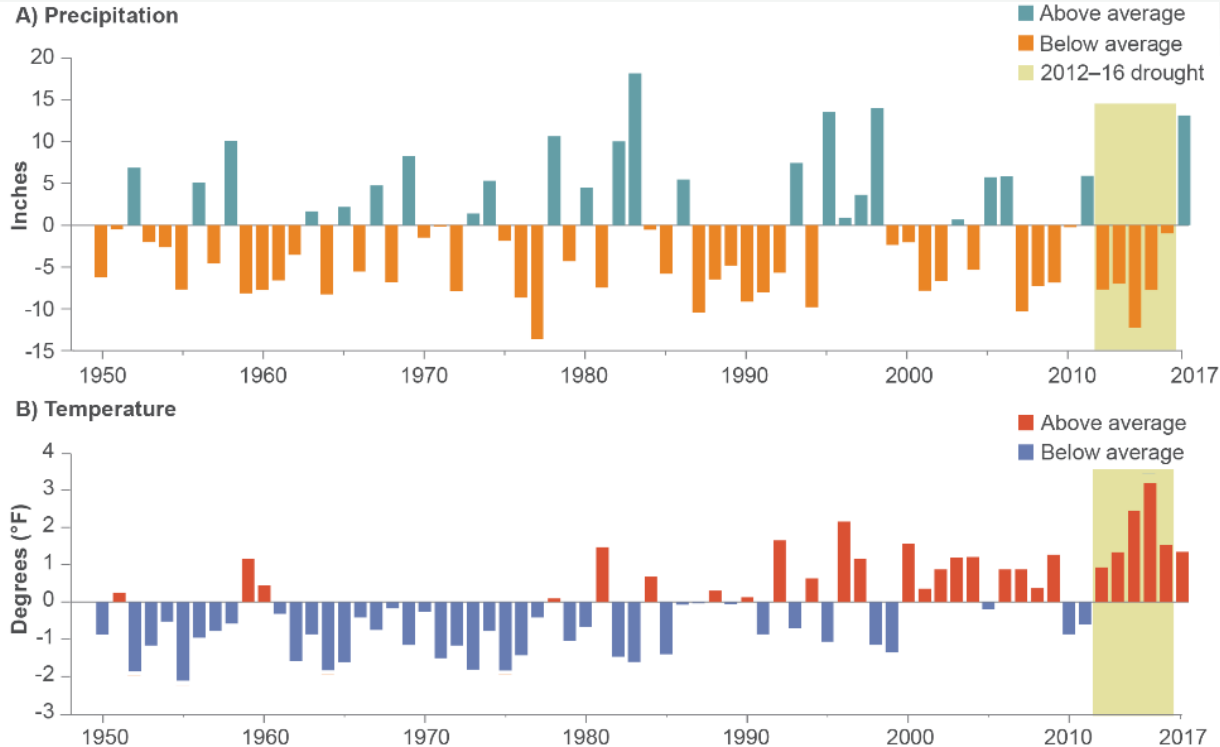
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Maintaining water quality in the face of reduced indoor water use

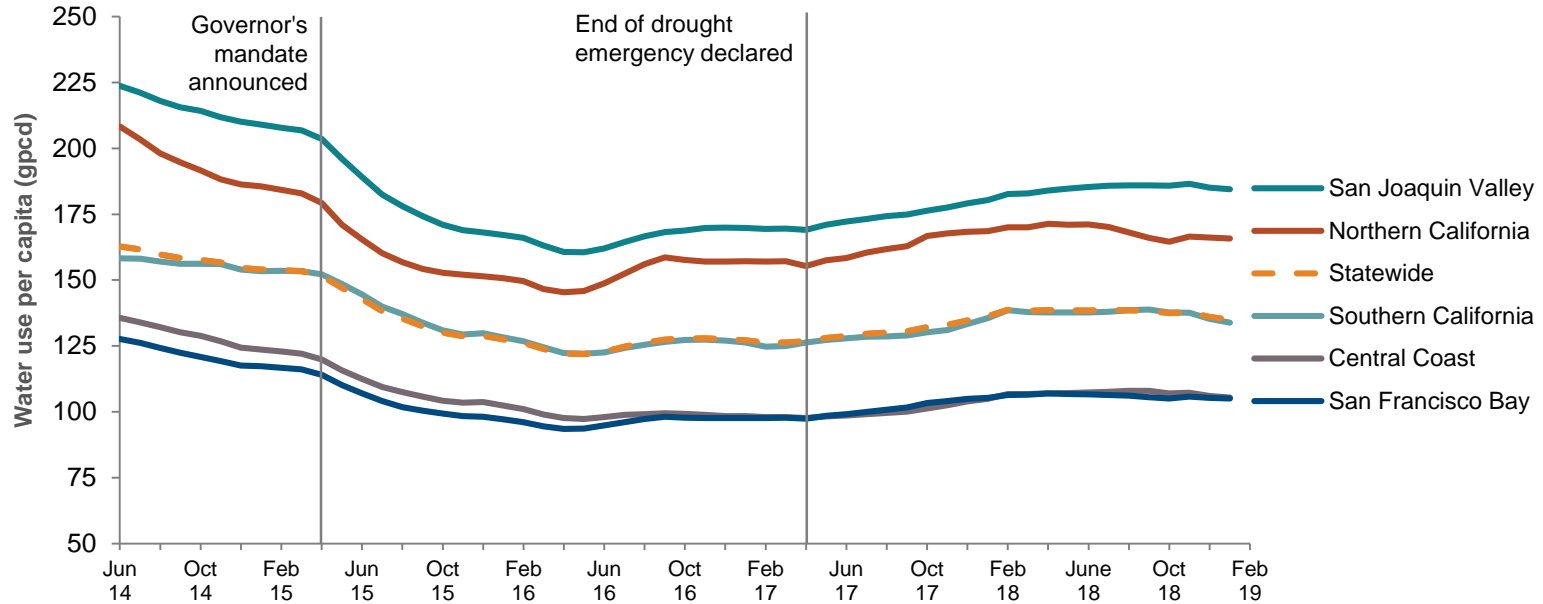
- Wastewater managers must adapt to:
 - Periodic short-term water conservation in response to droughts
 - Long-term increases in urban water use efficiency



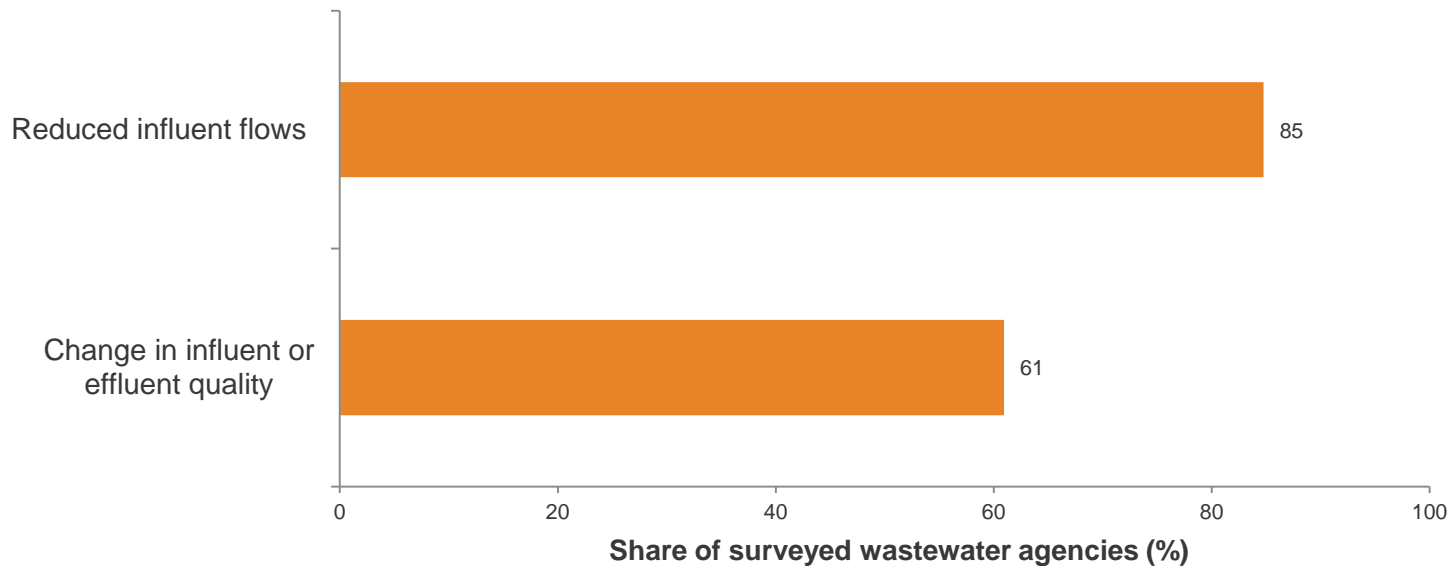
The unusually warm drought of 2012–16 was a window into the future



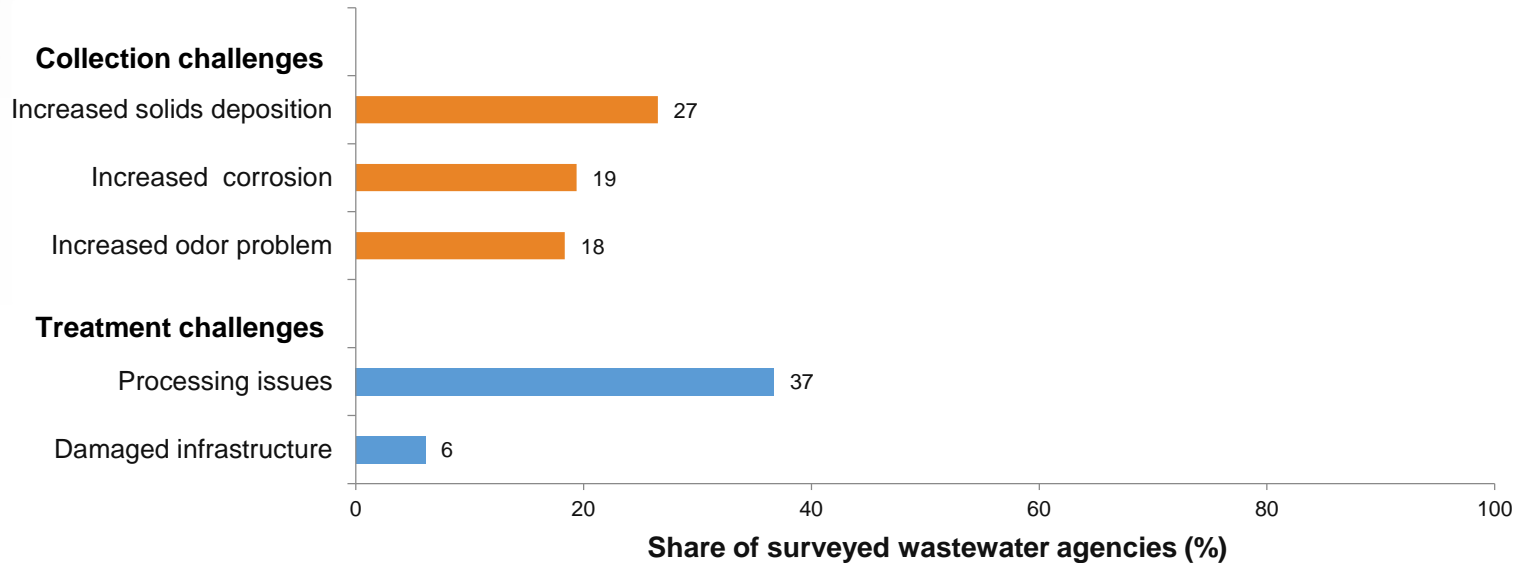
Urban water use rapidly declined during mandated conservation period



Reduced indoor water use led to reduced influent flow, changes to influent quality



Wastewater agencies experienced problems with collection and treatment during the drought



Agencies must adapt to long-term reductions in indoor water use

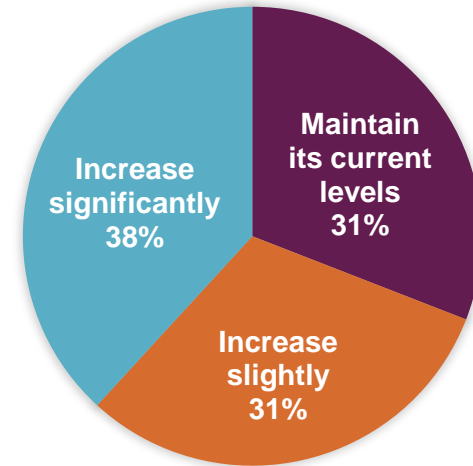
- Long-term indoor water use efficiency will impact amount, quality of influent
- Per capita water use is declining, further declines likely as a result of state, local policies



Recommendations for building resilience

- Increase information sharing and coordination with water suppliers
- Plan for future droughts
- Improve understanding of wastewater system vulnerability

“Coordination between water suppliers and wastewater agencies needs to _____.”



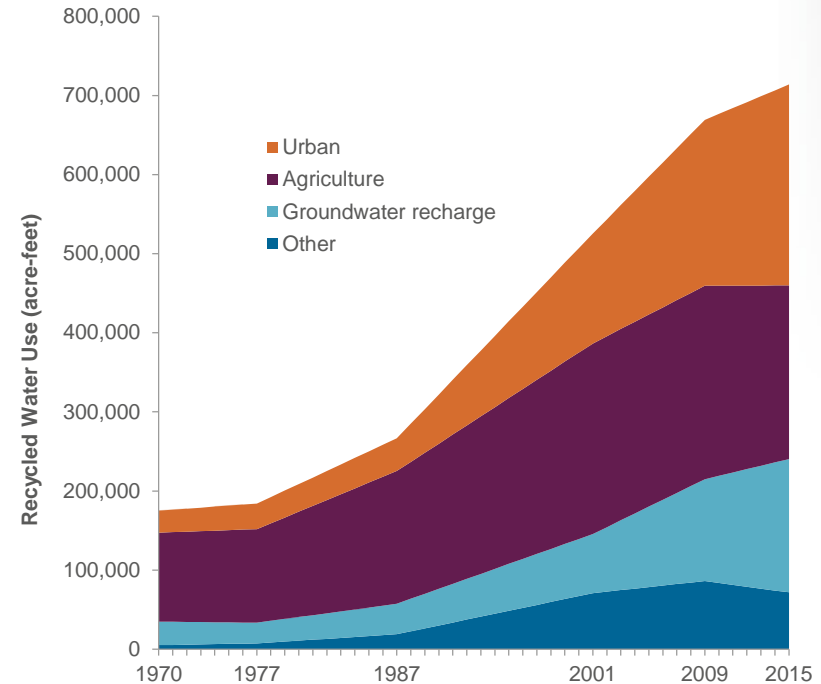
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Wastewater is the source for recycled water, a growing water supply

- Reduced influent flows during drought cut into recycled water production
- Changing influent characteristics creates challenges
- Evolving regulations and state policies will change demand

Recycled water use is growing



Recommendations for building resilience

- Regional plans for recycled water investments are needed
- Focus on flexible recycled water investments



Clovis Water Reuse Facility

Outline

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Most plants discharge treated wastewater into inland watersheds

- Adapting to declining water use and meeting increased demand for recycled water may mean less treated wastewater for:
 - Environmental water needs
 - Downstream users
- Climate change exacerbates these conflicts



Salton Sea

Recommendations for building resilience

- Identify watersheds vulnerable to changes in wastewater management
- Develop science to support management and regulatory decisions
- Evaluate tradeoffs caused by the interplay of state policies



LA River

Awareness of these challenges is growing, providing an opportunity for action



Thank you!

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

Caitrin Chappelle (chappelle@ppic.org; 415-291-4435)

Thank you for your interest in this work.

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