

# Pure Water Silicon Valley

Water: Now and in the Future



Santa Clara Valley Water District  
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# A Diverse Portfolio Has Enhanced Reliability



# Recycling Initiated 20 Years Ago for Wastewater Flow Cap Considerations and Has Improved Reliability

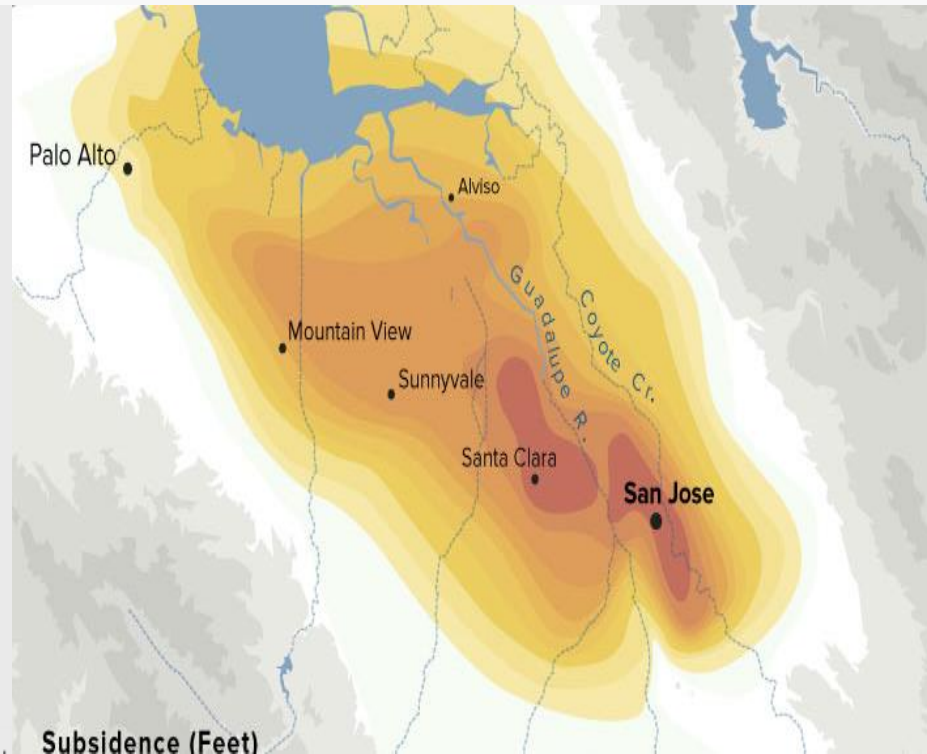
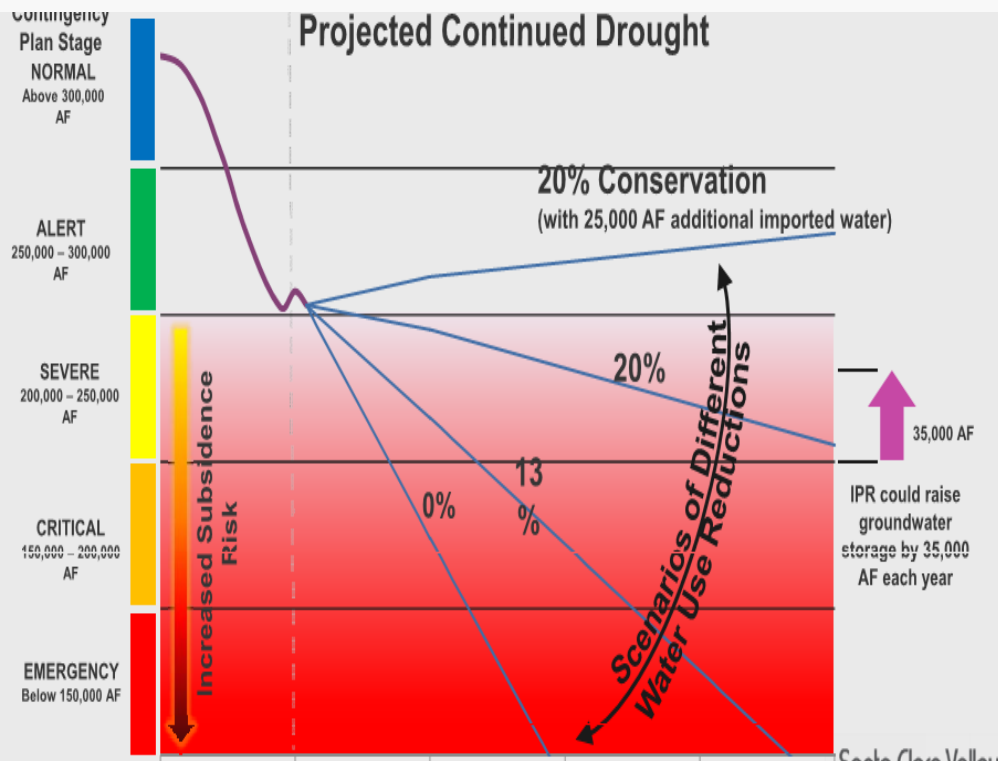


# But Recent Conditions Have Prompted the Need for Additional Action

Drought realities

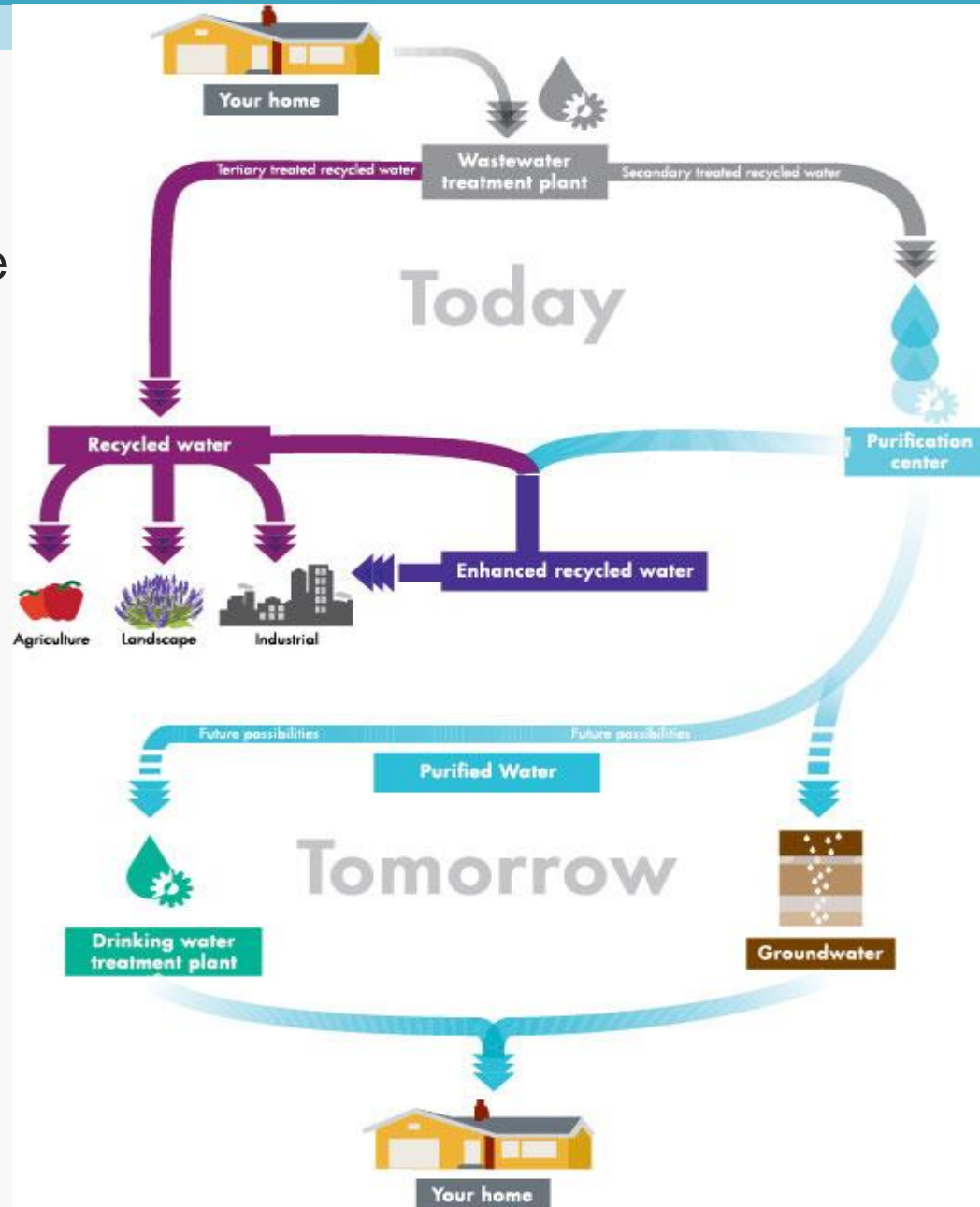
Economic impacts

Land subsidence risk

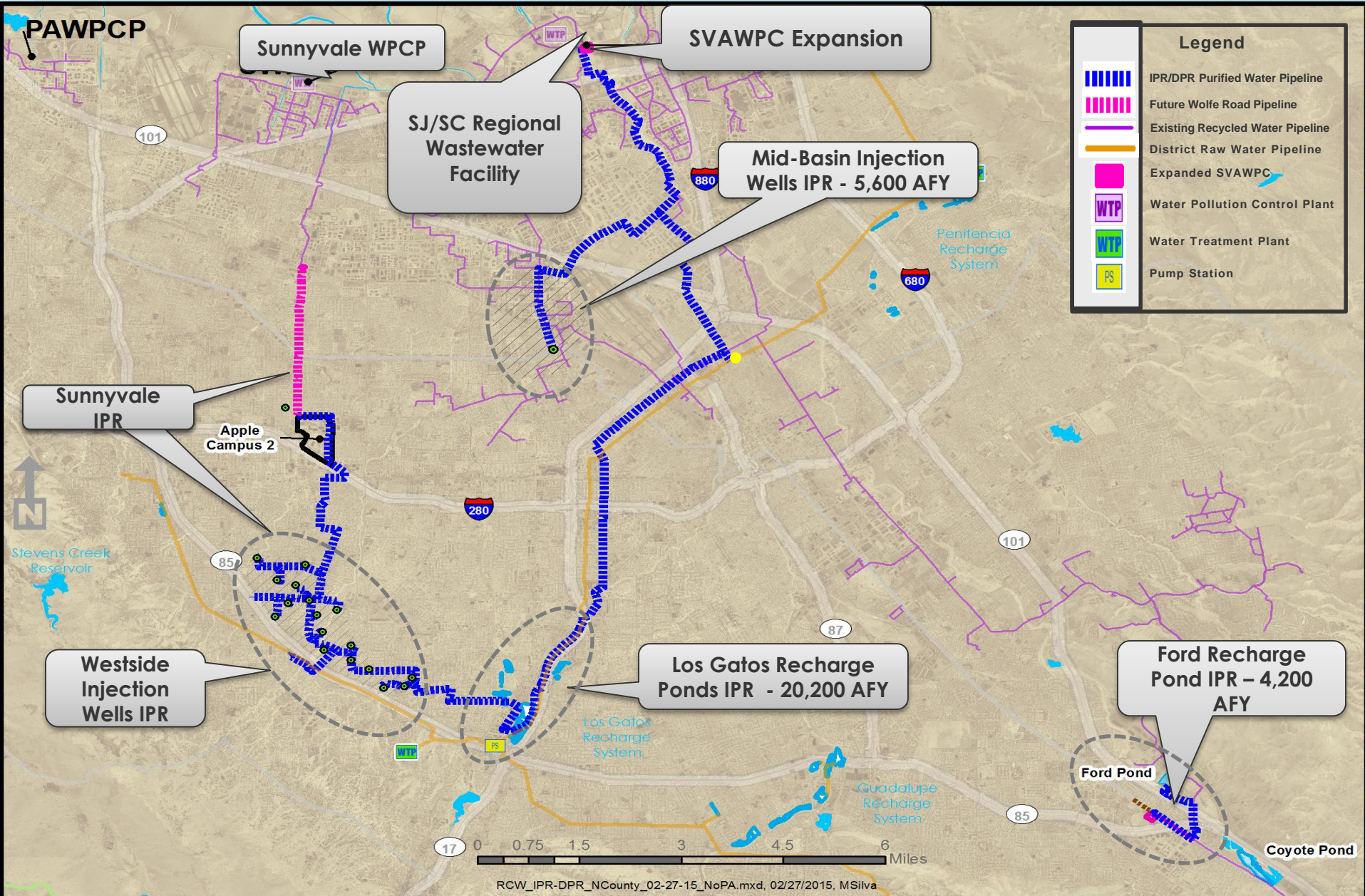


# Pure Water Silicon Valley

- ▶ Turning *up to* 45,000 acre-feet a year of what normally goes to the Bay into drinking water
- ▶ Accelerating a 25 year plan for potable reuse into 5 years
- ▶ Delivering ~ \$1B of advanced treatment technology, pipelines and injection facilities



# Pure Water Silicon Valley Program Components



# Challenges

- ▶ Public Perception
- ▶ Economics
- ▶ Schedule-Financing
- ▶ Environmental
- ▶ More



# Then: Negative Public Perception

## Mayor Opposes 'Toilet-To-Tap' Water Supply Proposal

POSTED: 2:05 AM, Sep 13, 2007



Mayor Jerry Sanders Thursday restated his opposition to using treated sewage to supplement San Diego's drinking water supply, dubbed "toilet-to-tap" by detractors.

"I'll oppose any effort to bring about toilet-to-tap," Sanders said. "There is neither the money nor the public will to support such a program."



Although water does not contain the proteins or sugars that would enable microbes to break it down like they do with food, its chemical composition does change.



## A big no to toilet-to-tap water plan

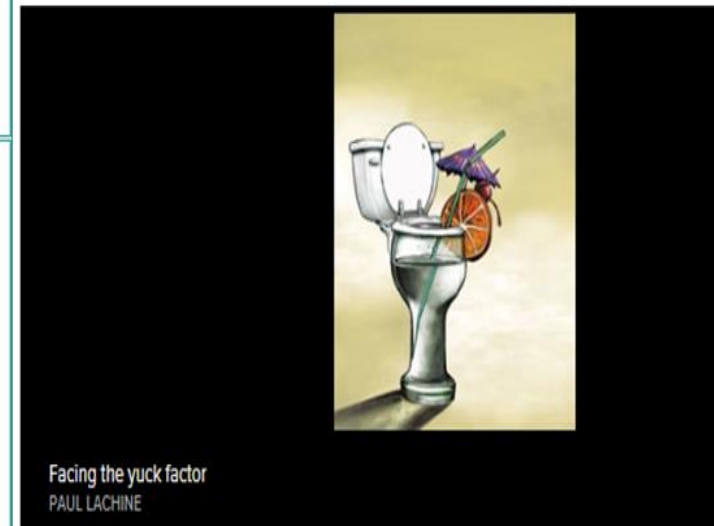
SCITECH/SCIENCE/ENVIRONMENT | 29 October 2012 at 10:01am

## Is Drinking from the Toilet Bowl the Best Way to Deal with Water Shortages?

## Facing the Yuck Factor

How has the West embraced water recycling? Very (gulp) cautiously

Peter Friederici | Sept. 17, 2007 | From the print edition



Facing the yuck factor  
PAUL LACHINE



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## Water Recycling Efforts Spark Policy Debate in California

March 24, 2008 at 6:45 PM EST

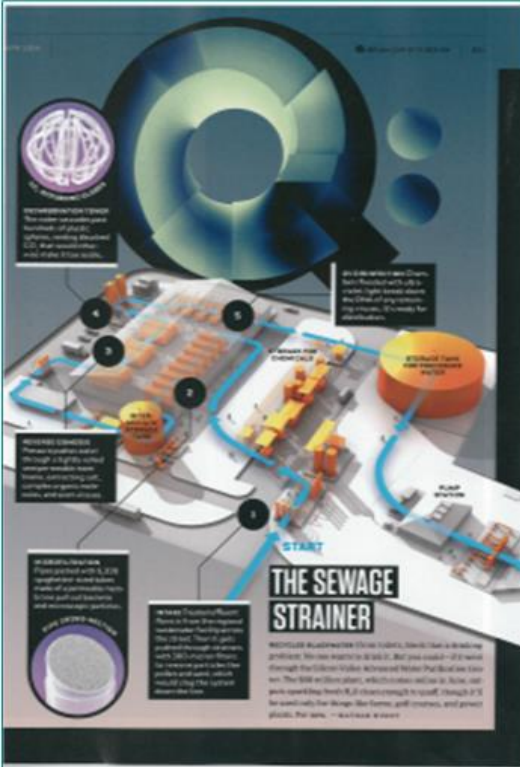


## UNION-TRIBUNE EDITORIAL No toilet-to-tap

Special water rate hike unwarranted

September 8, 2008

# Now: District Building Public Support



**QUEST** The Science of Sustainability

Water Food Energy Climate Biodiversity Mo

## Water Recycling Comes Of Age In Silicon Valley

Audio Report by *Amy Standen* for *QUEST Northern California* on Jul 19, 2013

**NBC Bay Area: New Water Treatment Plant Coming to Silicon Valley**  
March 12, 2014



## 'TOILET-TO-TAP' WATER PURIFYING HITS CALIFORNIA

'Cleaner than all of our other water sources'

Published: 07/23/2013 at 2:26 AM

**Robin Wilkey** robin.wilkey@huffingtonpost.com

## Silicon Valley Advanced Water Purification Center To Turn Sewage Into Drinkable Water (VIDEO)

**KQED NEWSROOM: Silicon Valley Thirsty for Recycled Water**  
March 7, 2014



**Secretary Laird visits the Silicon Valley Advanced Water Purification Center**  
Dec. 9, 2013

**Cupertino COURIER**  
Volume 65, Number 8 • February 1, 2013 • Cupertino, CA • Est. 1947

## Clean & Clear

Water treatment plants undergo

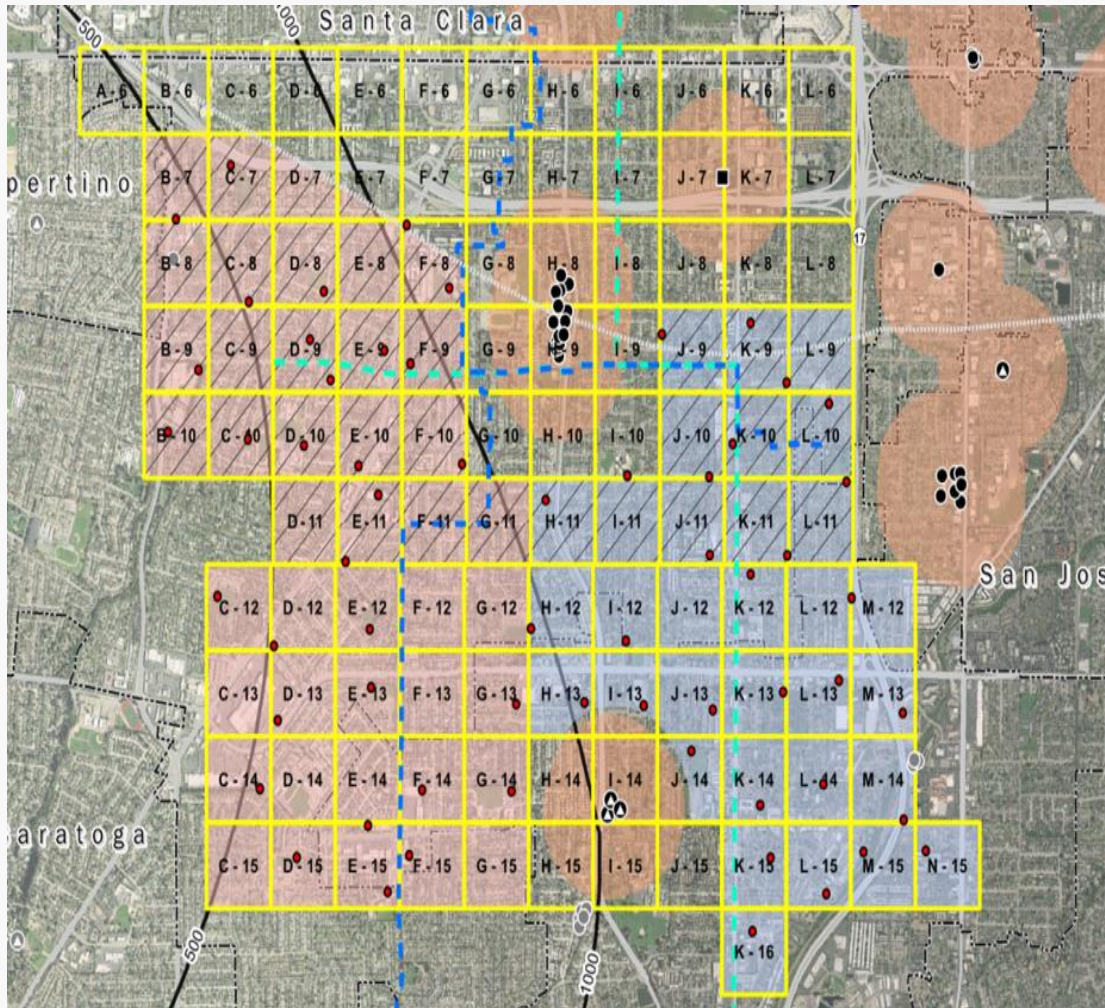


**Water, water everywhere:** By 2025, the Santa Clara Valley Water District expects 10 percent of its supply to come from recycled water, says Martin Grimes, program administrator.

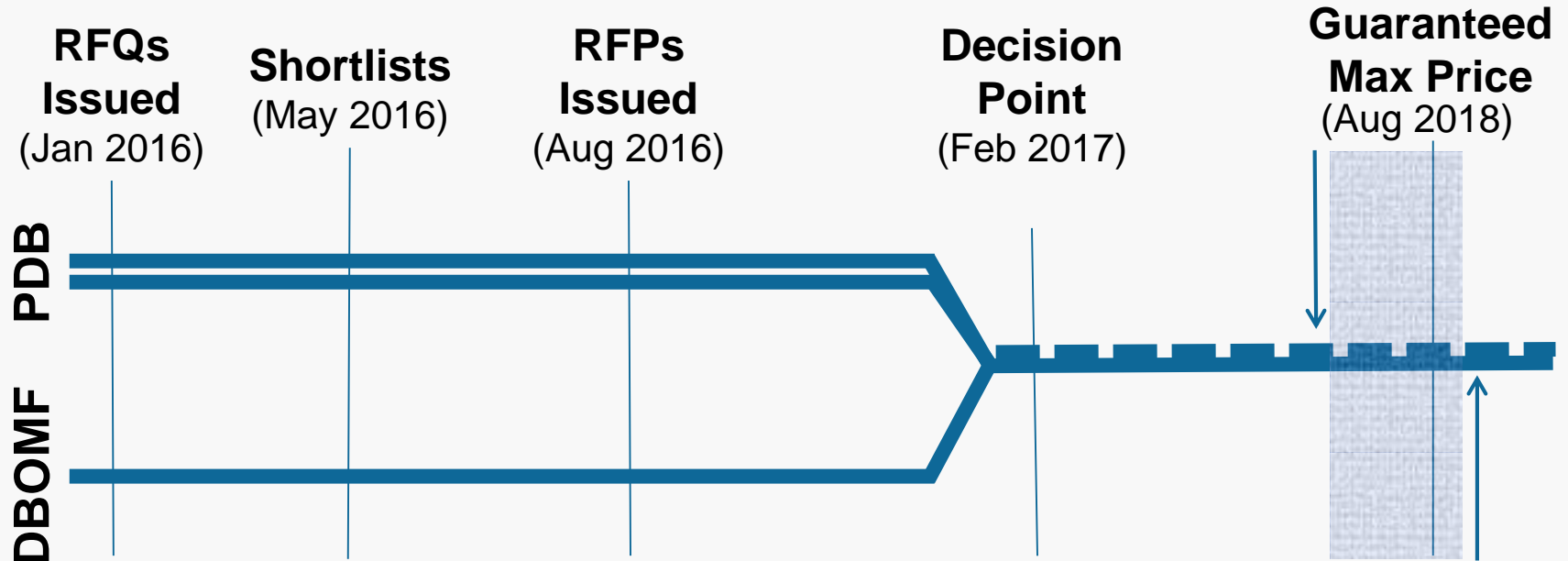
## Here, Drink A Nice Glass Of Sparkling Clear Wastewater

all want to start recycling water or ing for recycled water projects, the for business and landscaping ne

# Economics: What Percent of Installed Capacity Utilized on Average?

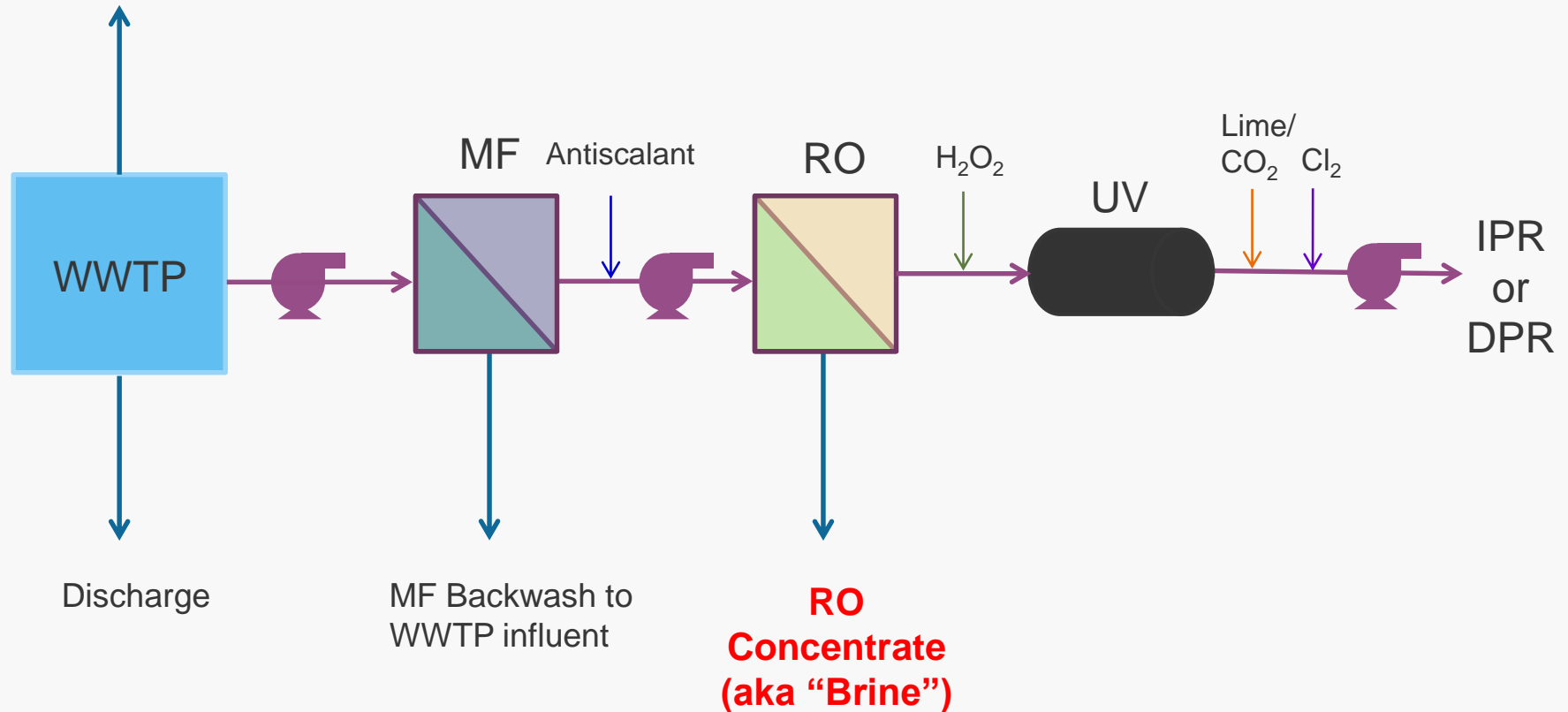


# An Unusual Procurement Approach

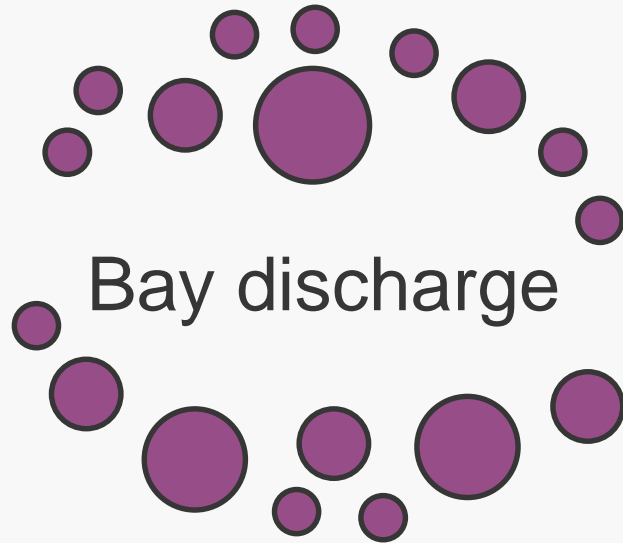


# The Challenge of RO Concentrate

Title 22 Recycled  
Water Customers



# RO Concentrate Management Options



- City of San Jose/Santa Clara's existing shallow water outfall
- Existing deep water outfall

# Potential Use of San Jose-Santa Clara Regional Wastewater Facility Outfall

- ▶ Fundamental Premise: Continued compliance with NPDES Permit.
- ▶ Most expeditious and least cost
- ▶ Issues
  - ▶ Metals considerations
  - ▶ Chronic toxicity
- ▶ Approach
  - ▶ Mass balance analysis
  - ▶ Chronic toxicity testing
  - ▶ Assess hydrodynamics and potential for seeking dilution credits



*Silicon Valley Advanced Water Purification Center*

# Approach to Chronic Toxicity Testing at SJ-SC RWF

## Current testing as part of existing 8 MGD MF-RO facility

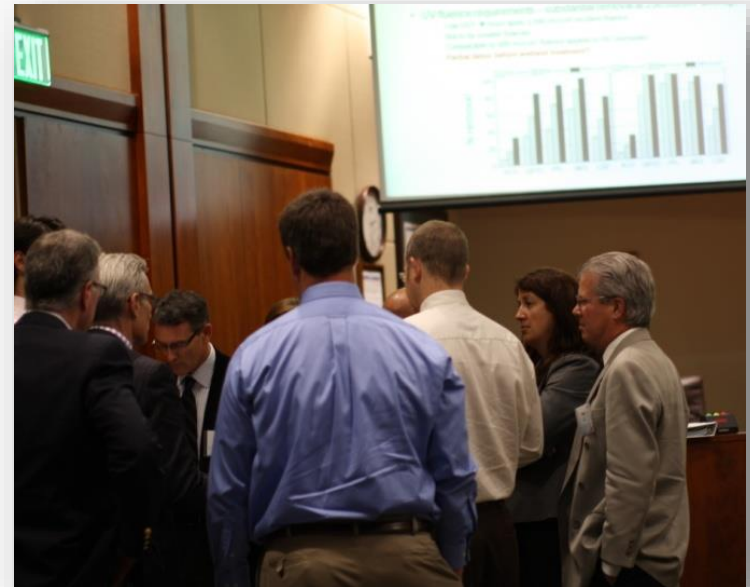
- 4 times per year
- 0.5, 1.0, 2.0, 4.0 and 8.0% blends of RO concentrate with lab water
- Use *Ceriodaphnia* (same as required for NPDES permit)

## Proposed testing for up to additional 40 MGD MF-RO facility

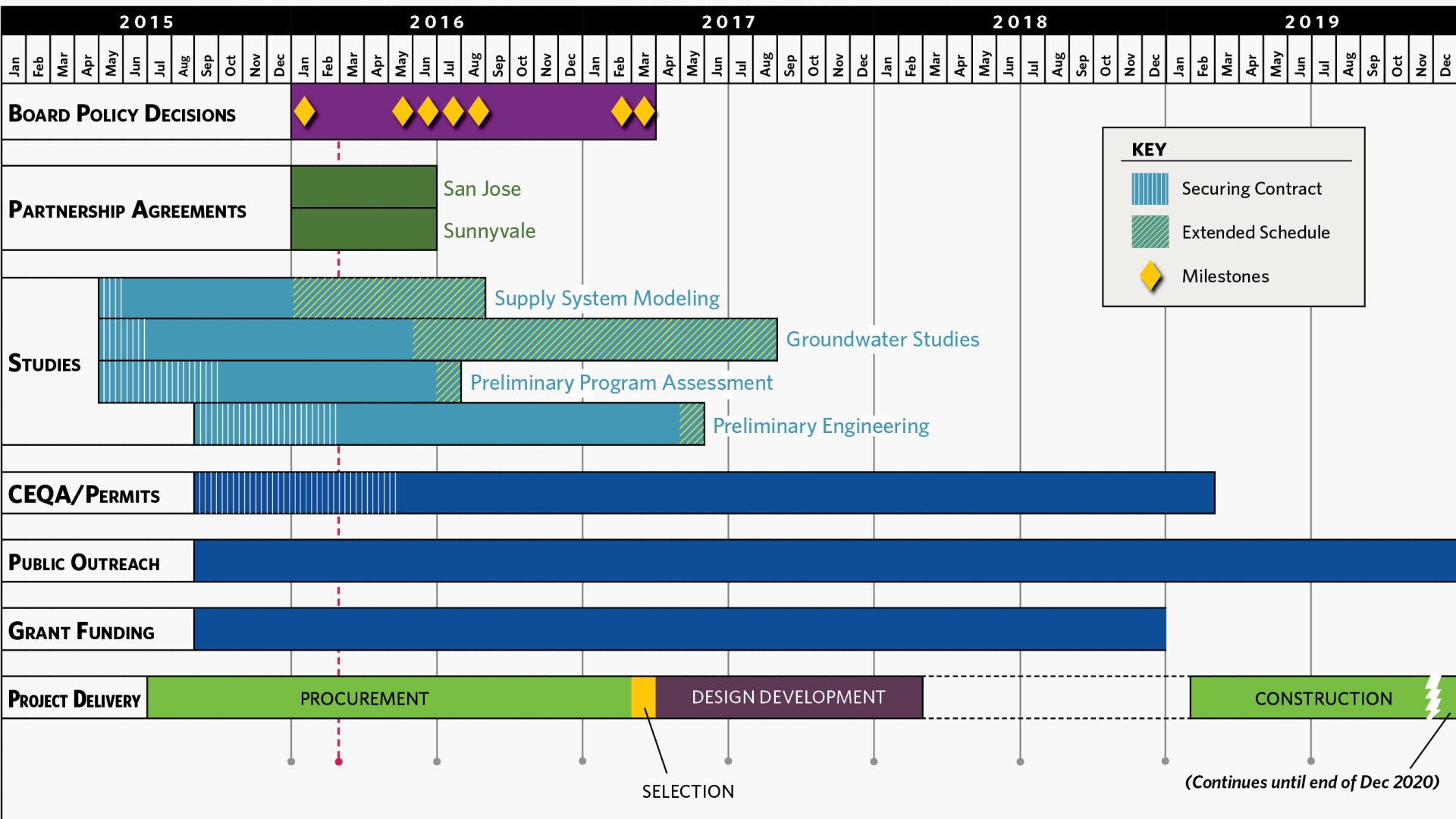
- 6 tests over 3 months
- 8, 16, 24, 32 and 40% blends (i.e., up to 40 MGD capacity)
- Three conditions: *Ceriodaphnia* with and without salt controls and *Thalassiosira*

# Potential for Dilution Credits

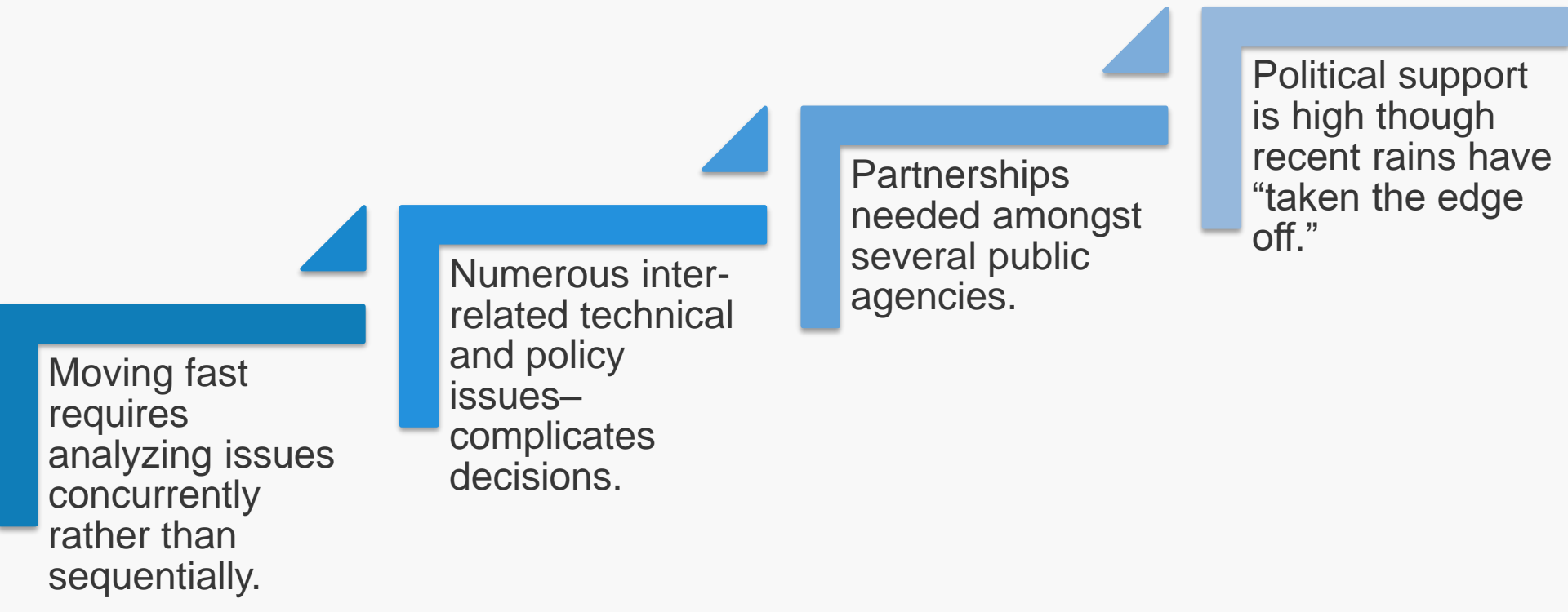
- ▶ Precedent at other locations
- ▶ March 2015 RO Concentrate Workshop
  - ▶ City of San Jose, regulators, District and others discussed concept
  - ▶ Basin plan language supports to accommodate water reuse programs
- ▶ Approach
  - ▶ RMA hydrodynamic model
  - ▶ Evaluate 24 hour and 96 hour periods



# Current Schedule for Pure Water Silicon Valley Program



# A Few Closing Thoughts



Moving fast requires analyzing issues concurrently rather than sequentially.

Numerous inter-related technical and policy issues—complicates decisions.

Partnerships needed amongst several public agencies.

Political support is high though recent rains have “taken the edge off.”