

# Water Demand, Supply, Conveyance and Storage

*March 23, 2021 - Board Workshop*

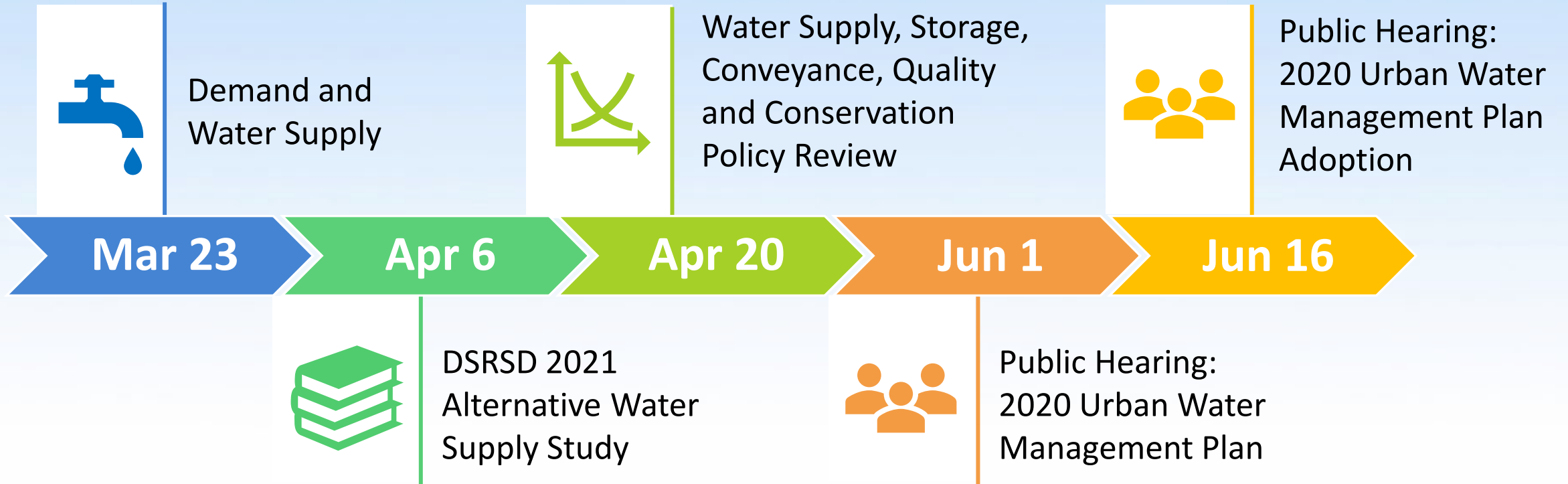


**Dublin San Ramon  
Services District**

*Water, wastewater, recycled water*

**Judy Zavadil  
Irene Suroso**

# Water Supply Planning

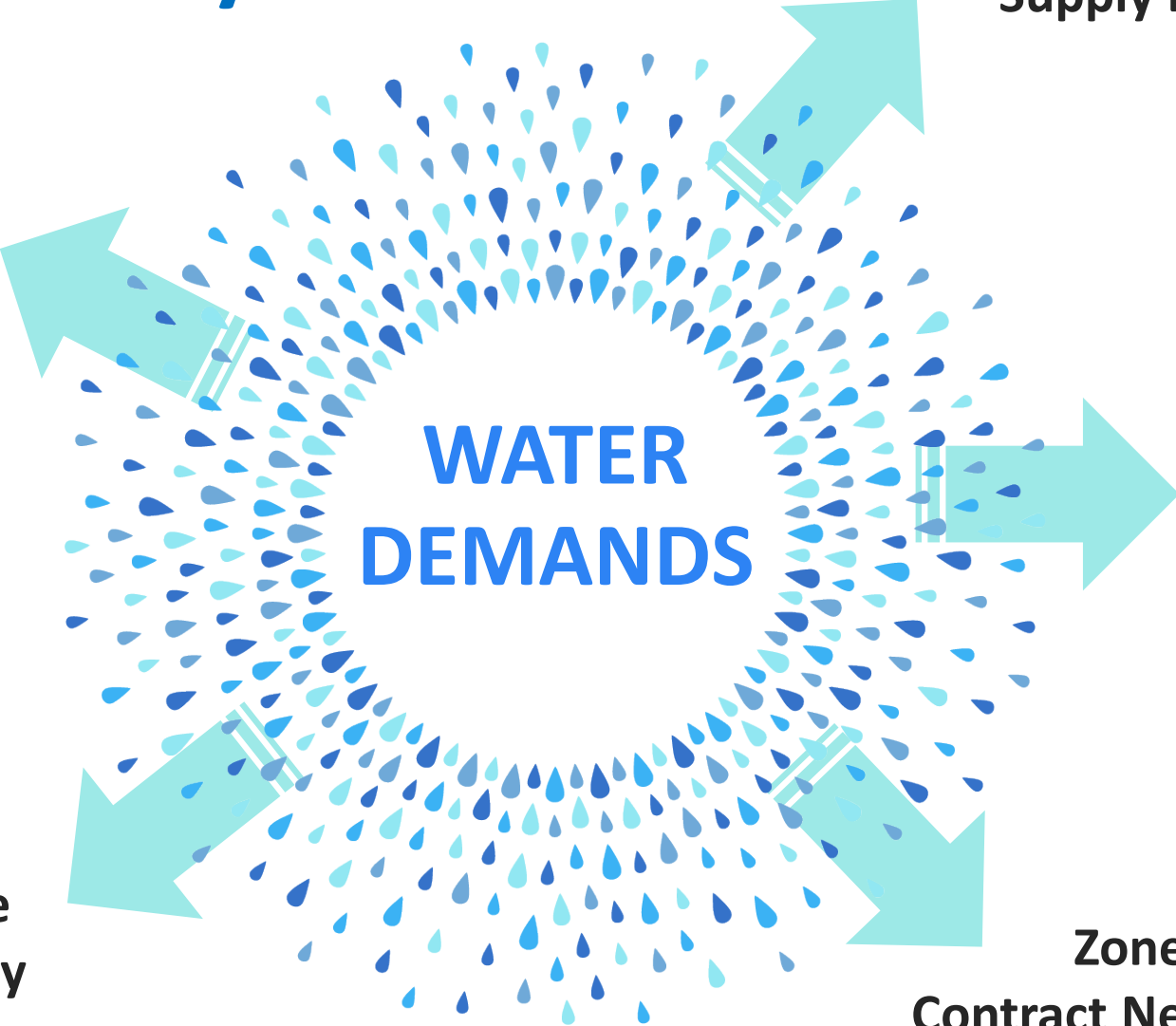




# Demand is Key

DSRSD  
Urban Water  
Management Plan

Zone 7 Water  
Supply Evaluation



Zone 7  
Urban Water  
Management Plan

DSRSD Alternative  
Water Supply Study

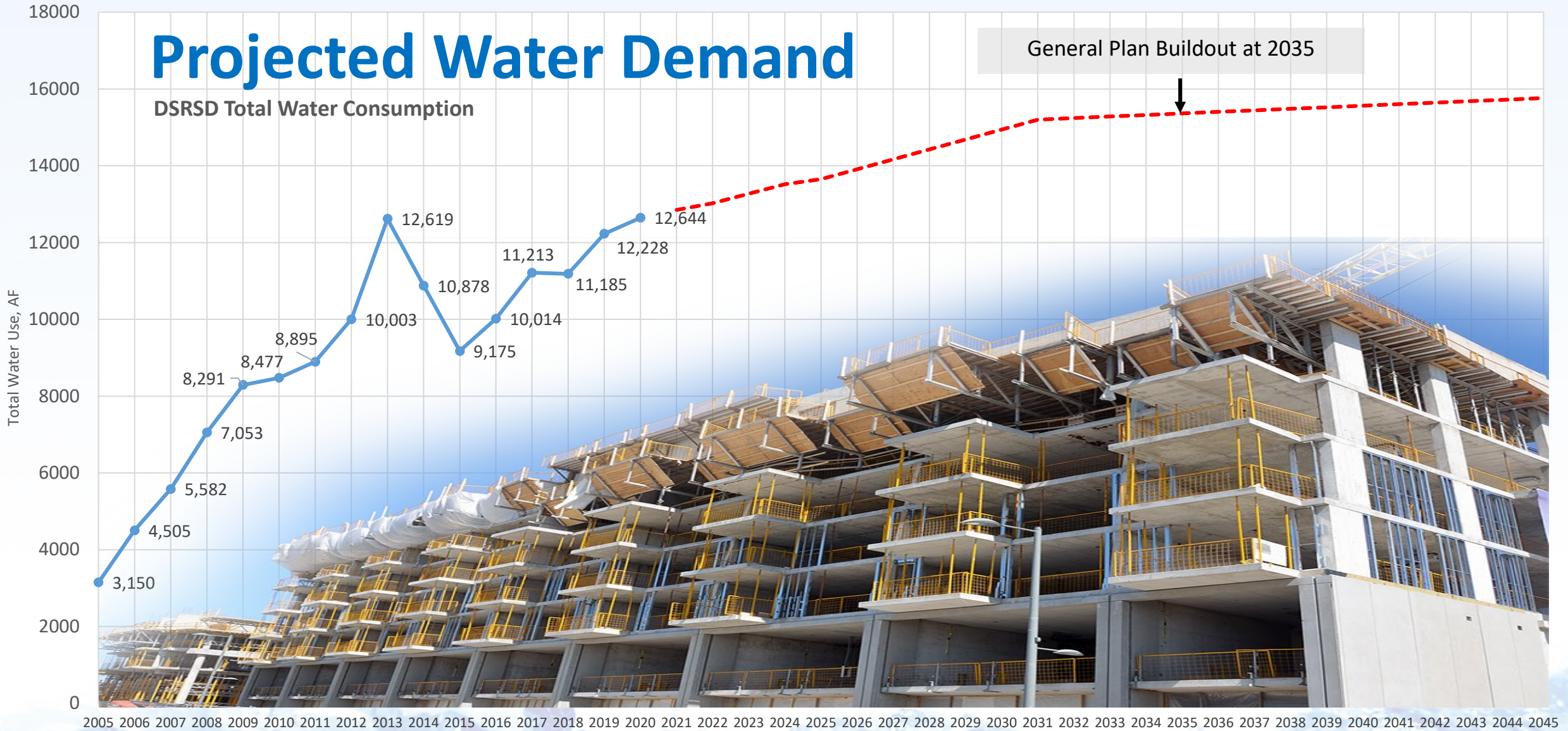
Zone7/DSRSD  
Contract Negotiation (2024)



# Projected Water Demand

DSRSD Total Water Consumption

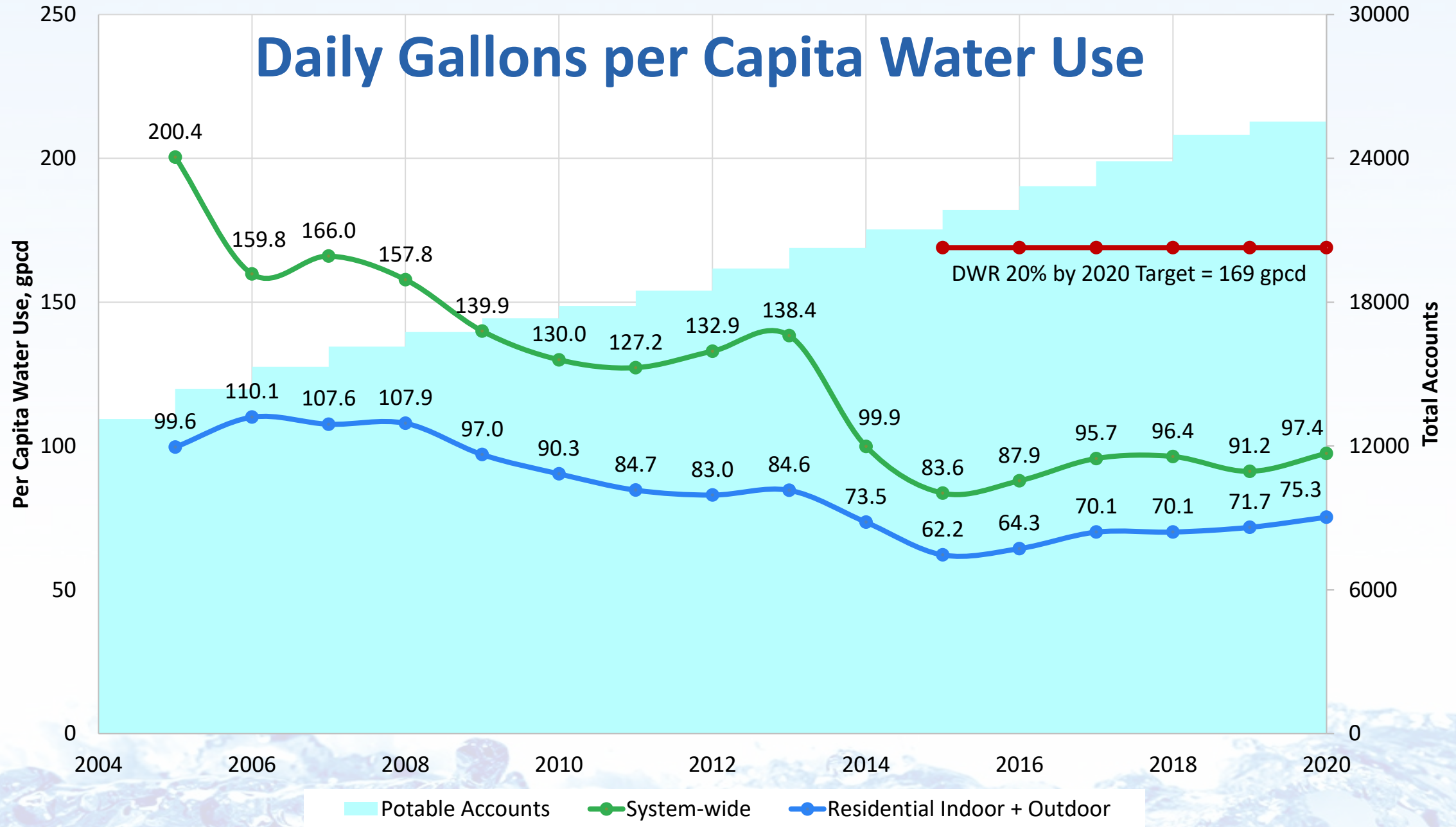
General Plan Buildout at 2035



—●— Total Water Use (Potable+Recycled)    - - - Projected Water Use (Potable + Recycled)



# Daily Gallons per Capita Water Use



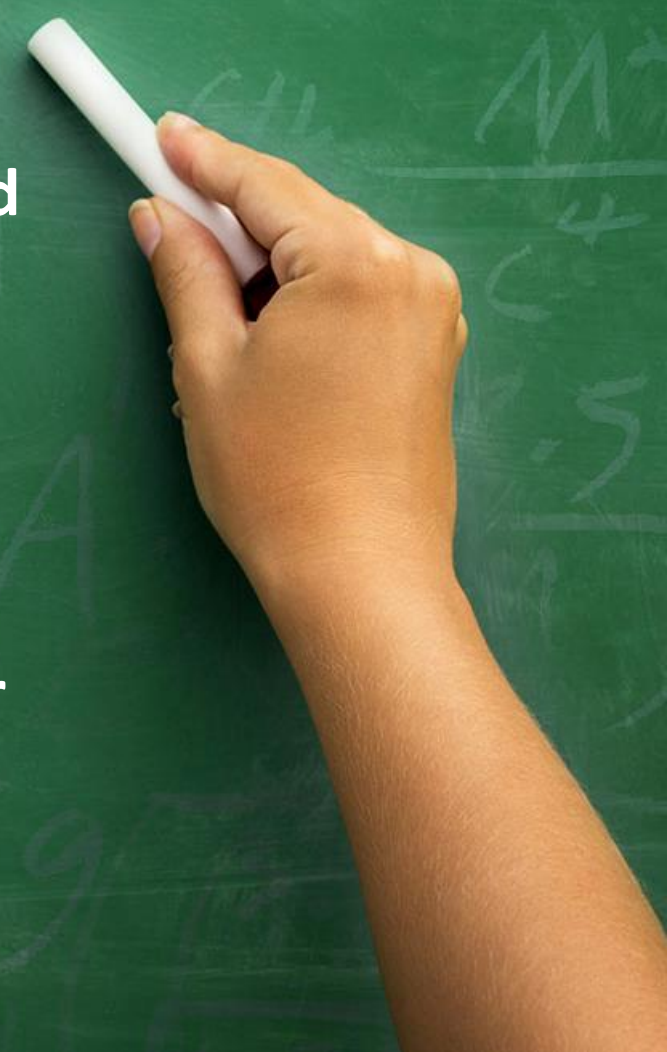
■ Potable Accounts    
 ● System-wide    
 ● Residential Indoor + Outdoor

DWR 20% by 2020 Target = 169 gpcd

# Making Water Conservation a California Way of Life

State AB 1668  
and SB 606

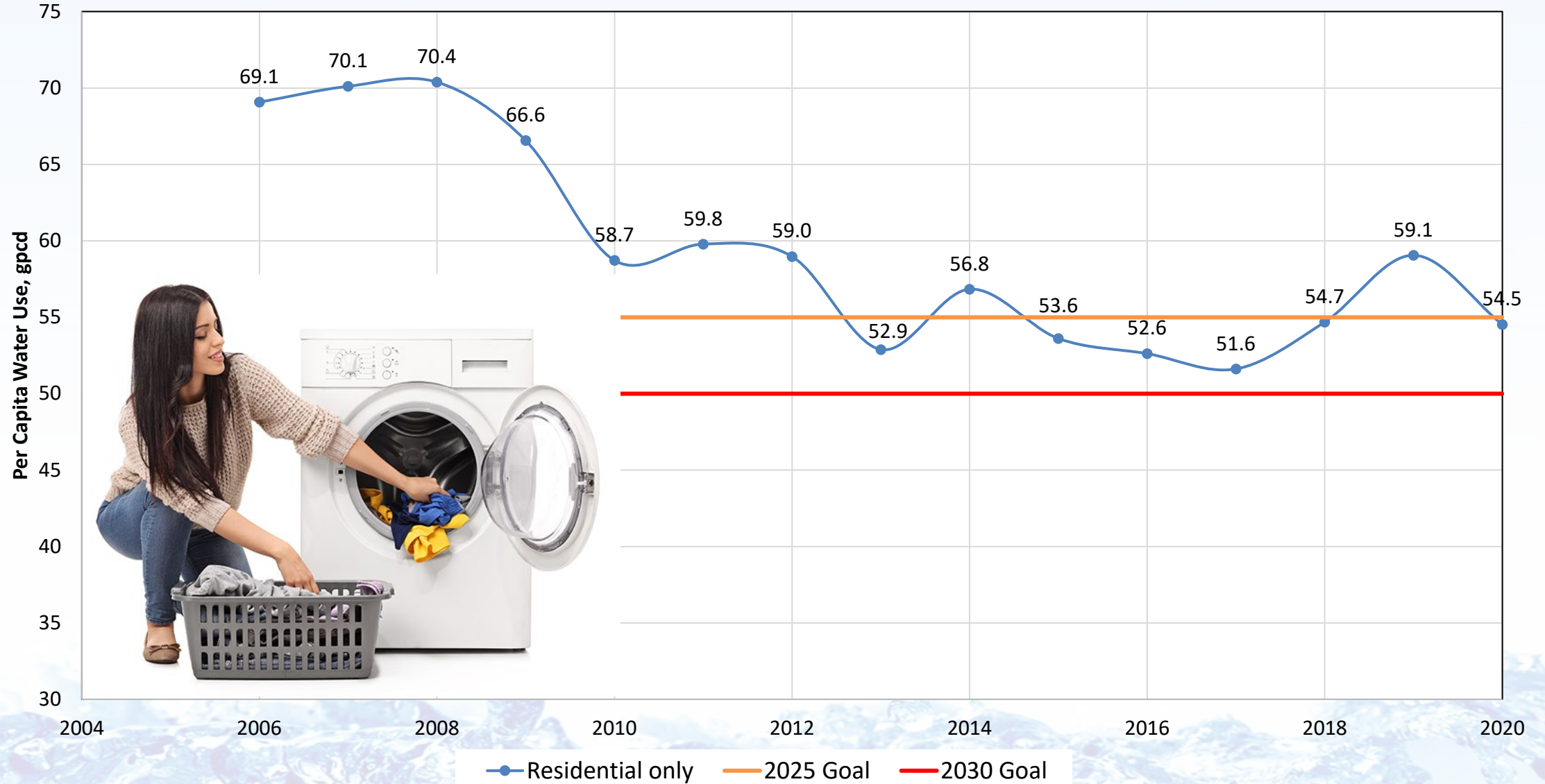
$$\begin{aligned} & \text{Aggregate residential indoor use} \\ & + \\ & \text{Aggregate residential outdoor use} \\ & + \\ & \text{Aggregate CII outdoor use} \\ & \text{CII landscape areas with dedicated} \\ & \text{irrigation meters} \\ & + \\ & \text{Aggregate water loss} \\ & + \\ & \text{Bonus incentives} \\ & \text{Up to 15\% of potable reuse water} \\ & = \\ & \text{DSRSD Water Use Objective} \end{aligned}$$





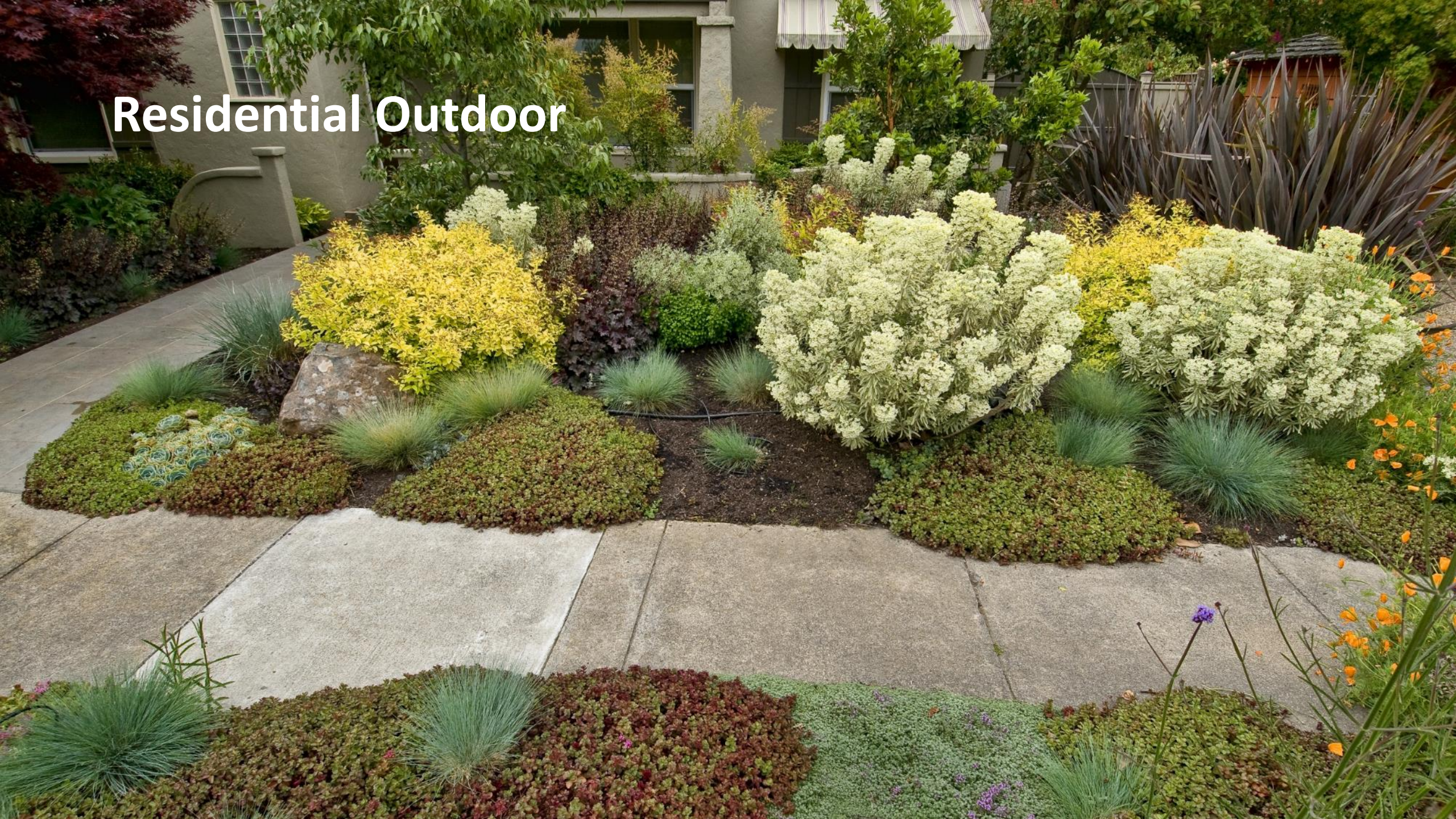
# Residential Indoor Target, gallons per capita per day

Residential Indoor Water Use - Based on Winter Months





# Residential Outdoor





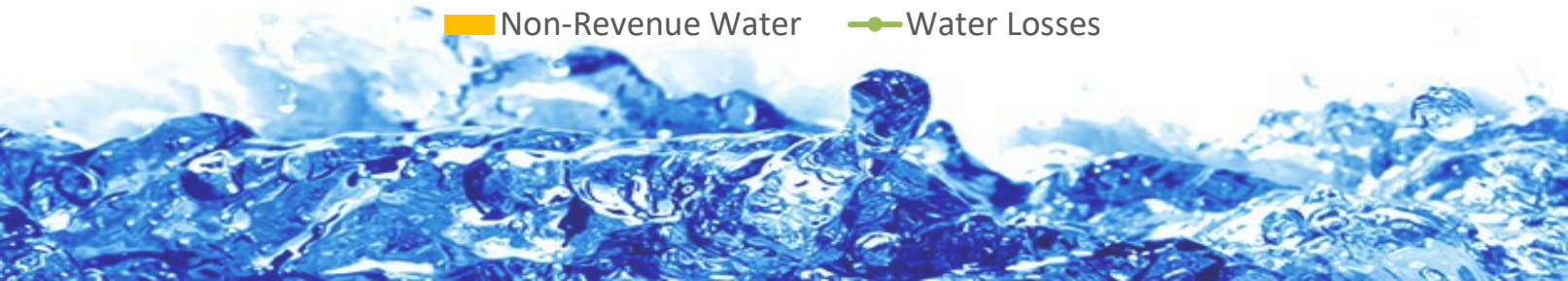
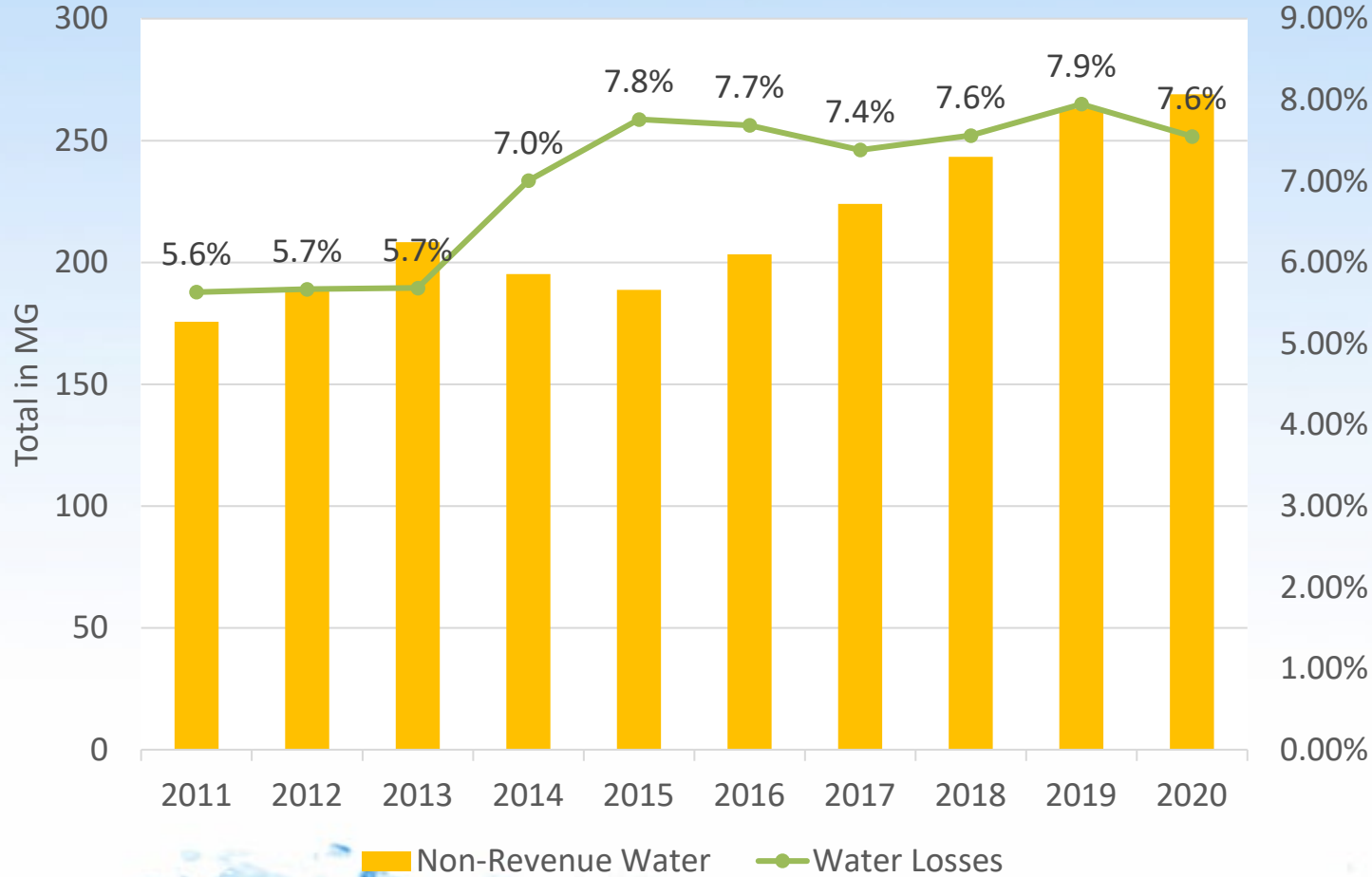
# CII Outdoor Landscape



Areas irrigated with recycled water are included in the budget calculation and must also meet conservation standards.



# System-Wide Water Losses





2019 - 2021



Developing standards and regulatory docs

2022



Adopt rulemaking

2024



Suppliers calculate objectives

2027



Suppliers reach objectives

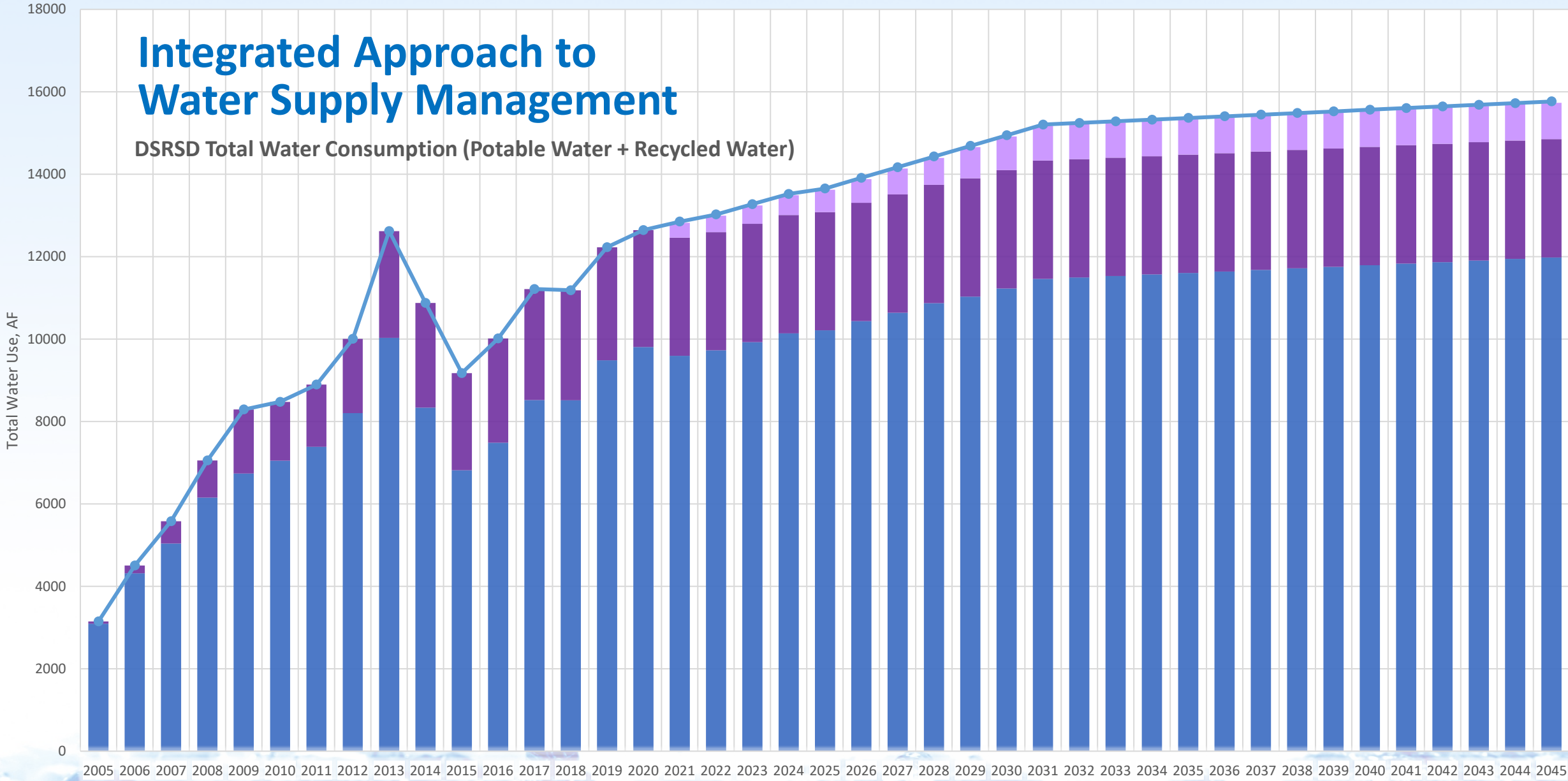
**RULEMAKING**

**REPORTING**

**COMPLIANCE**

# Integrated Approach to Water Supply Management

DSRSD Total Water Consumption (Potable Water + Recycled Water)

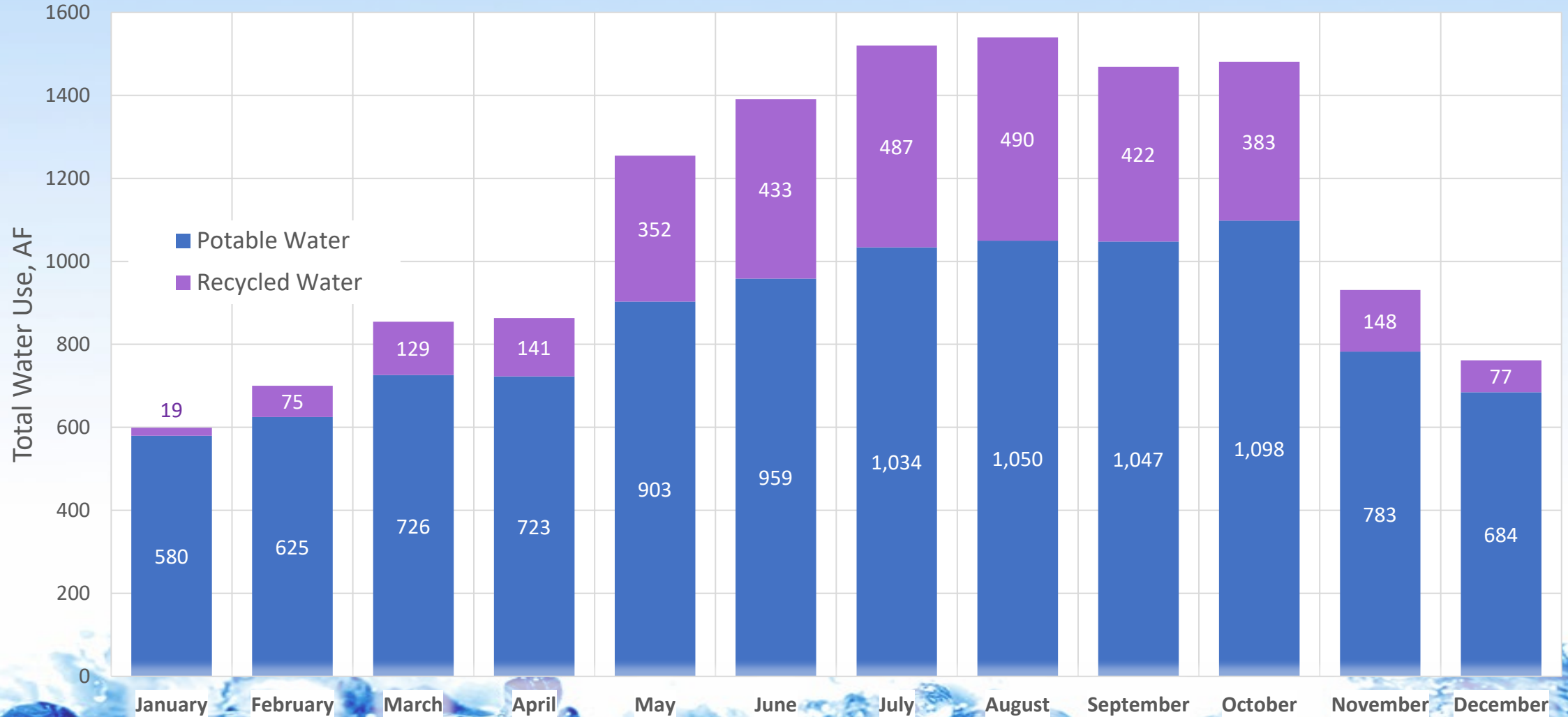


■ Potable Water Use without Moratorium    
 ■ Recycled Water Use - Moratorium    
 ■ Additional Recycled Water Supply Needed    
 ● Total Water Use with RW Moratorium



# Seasonal Recycled Water Use

Monthly Water Consumption - Calendar Year 2020





# Water Supply, Storage, and Conveyance

- ▶ **Tri-Valley's Water Supplies**
  - » **The State Water Project**
  - » **Conveyance of Imported Water**
  - » **Zone 7's Storage System**

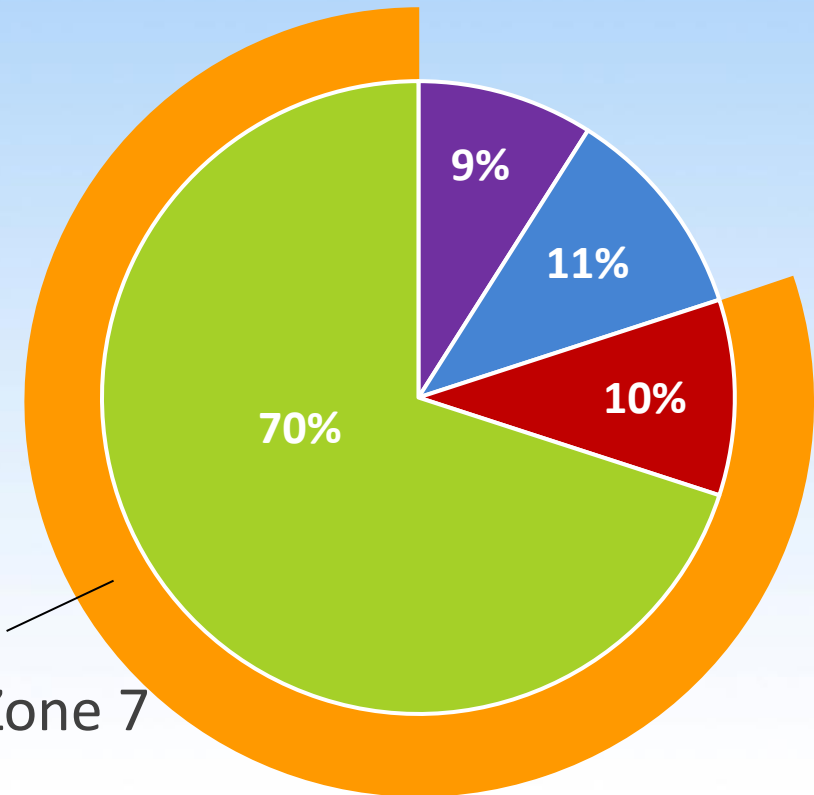




# Tri-Valley Water Supply

- » 80% of Supply is provided Zone 7
- » 70% State Water Project
- » 10% local runoff
- » 11% natural groundwater recharge
- » 9% recycled water

## Sources of Supplies



Provided by Zone 7

- Retailer Recycled Water
- Ground Water Quotas (Retailers)
- Arroyo Valle (Zone 7)
- State Water Project (Zone 7)

# State Water Project (70%)







**Water is stored behind the Oroville Dam**



An aerial photograph showing the confluence of the Feather River and the Sacramento River. The Feather River, with its characteristic greenish water, flows from the upper left towards the center. The Sacramento River, with its brownish water, flows from the upper right towards the center. The two rivers meet in the middle. The surrounding landscape includes agricultural fields, some of which are harvested and appear brown, and lush green areas. A road runs parallel to the Feather River on the left side. A small boat is visible in the water near the top left. The text "Feather River blends with the Sacramento River" is overlaid in white at the bottom left.

**Feather River blends  
with the Sacramento River**





**Water flows into the Sacramento-San Joaquin Delta...**





Water flows through the Delta





South Bay Aqueduct

To Oakland

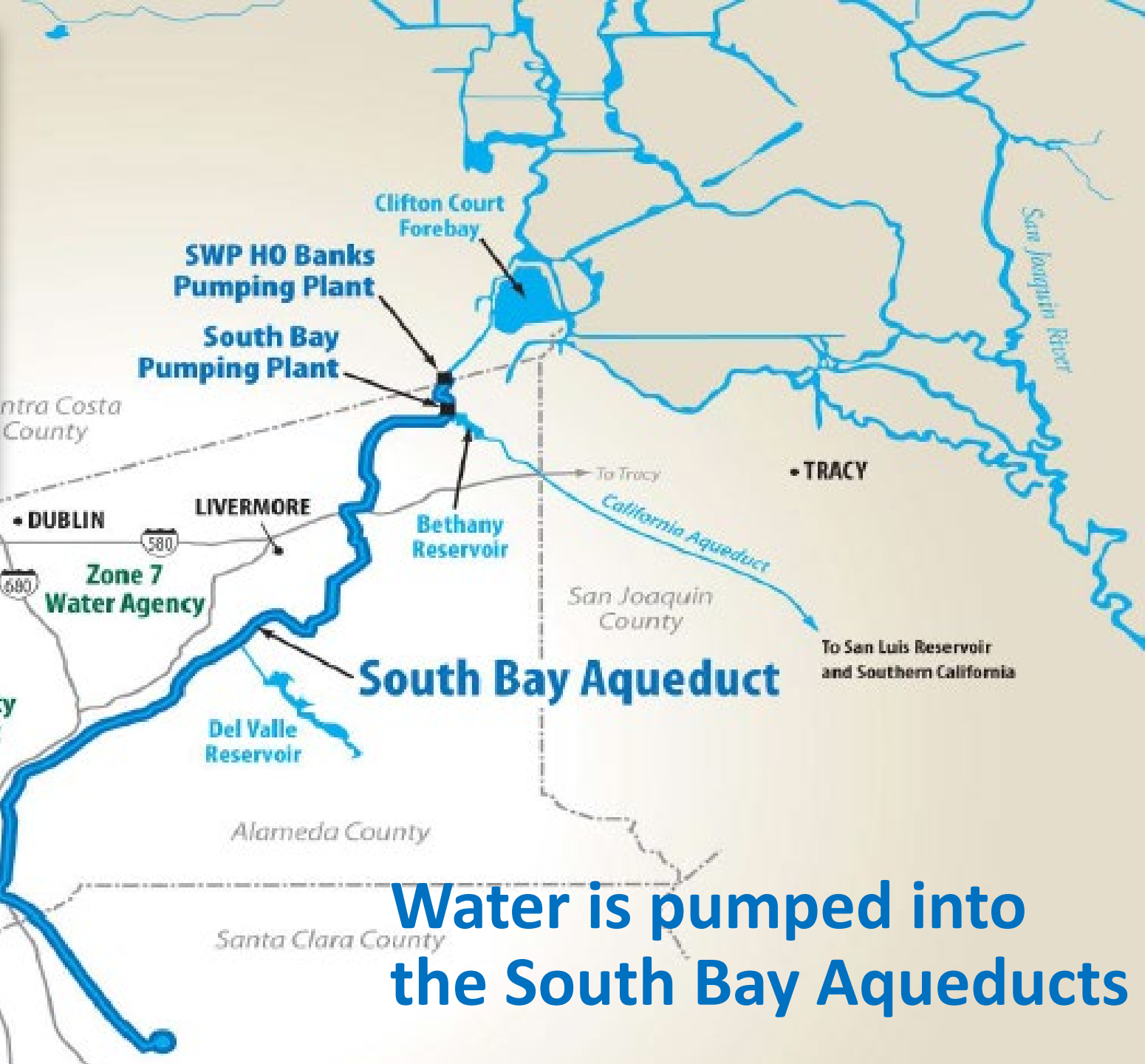
To San Francisco

880

580

580

101



Water is pumped into the South Bay Aqueducts



# Challenges with Delta Conveyance







Reduced  
Reliability of  
Imported  
Supplies

**Sea Level  
Rise**





Reduced  
Reliability of  
Imported  
Supplies

**Water  
Quality  
Degradation**





Reduced  
Reliability of  
Imported  
Supplies

**Seismic  
Risks**



A close-up photograph of a small, slender fish with iridescent colors (purple, green, and blue) swimming in an aquarium. The fish is positioned horizontally, facing left. The background is a soft-focus view of the aquarium's interior, showing a layer of multi-colored gravel (yellow, orange, and white) at the bottom. A large, blue, downward-pointing arrow is overlaid on the right side of the image, containing text.

Reduced  
Reliability of  
Imported  
Supplies

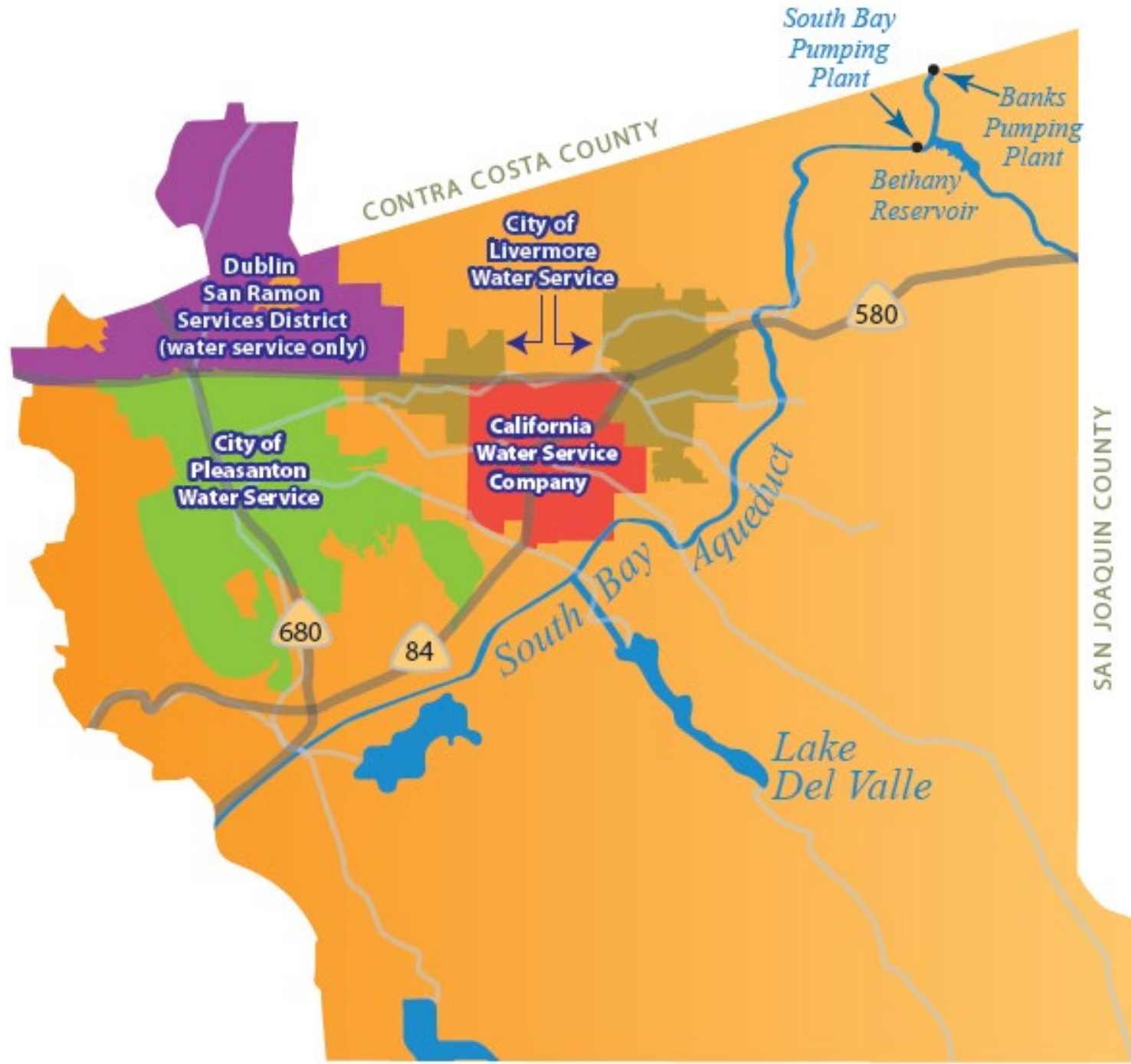
**Ecosystem  
Considerations**



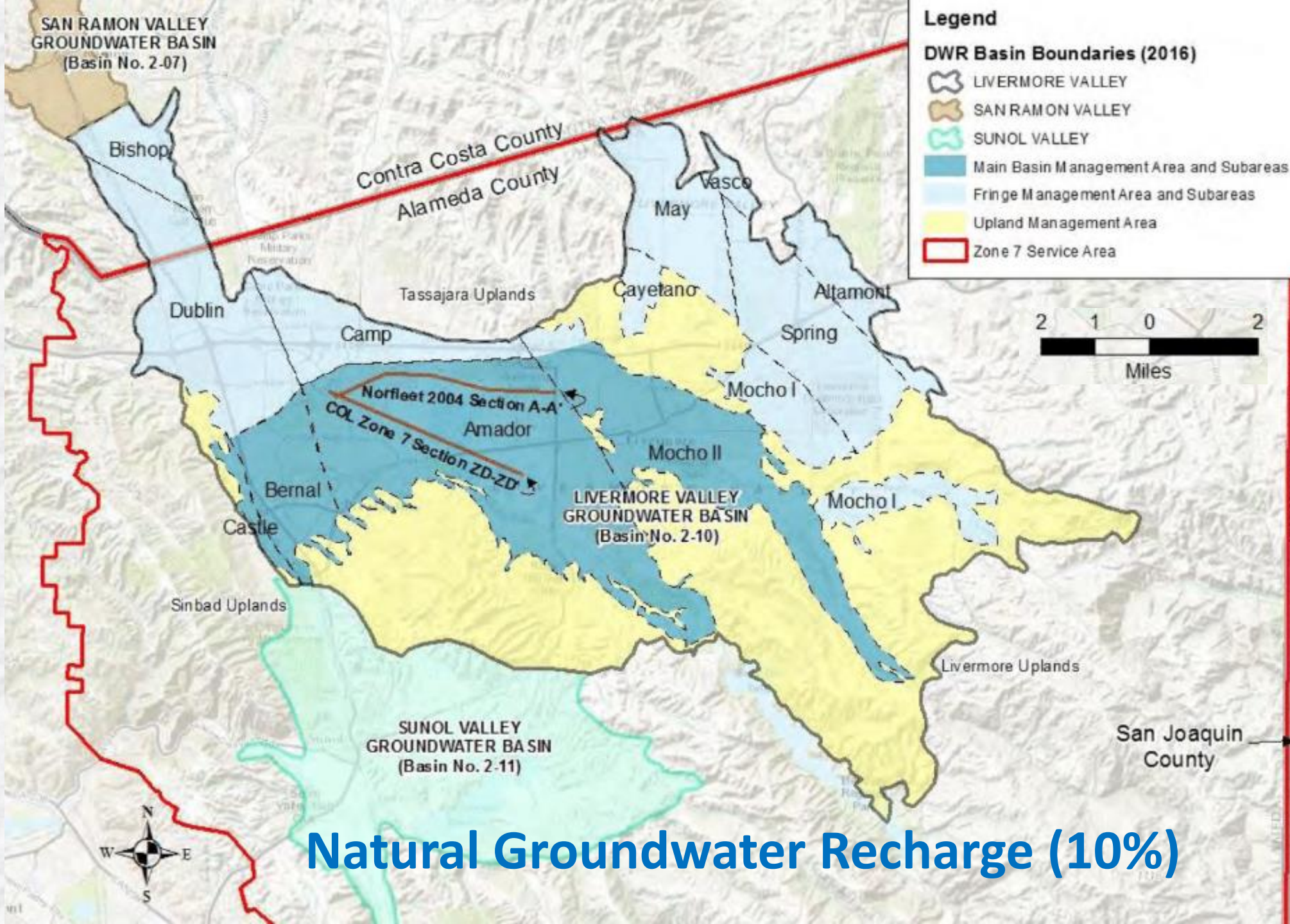


# Zone 7 and Water Retailers

- Cal Water
- DSRSD
- Livermore
- Pleasanton



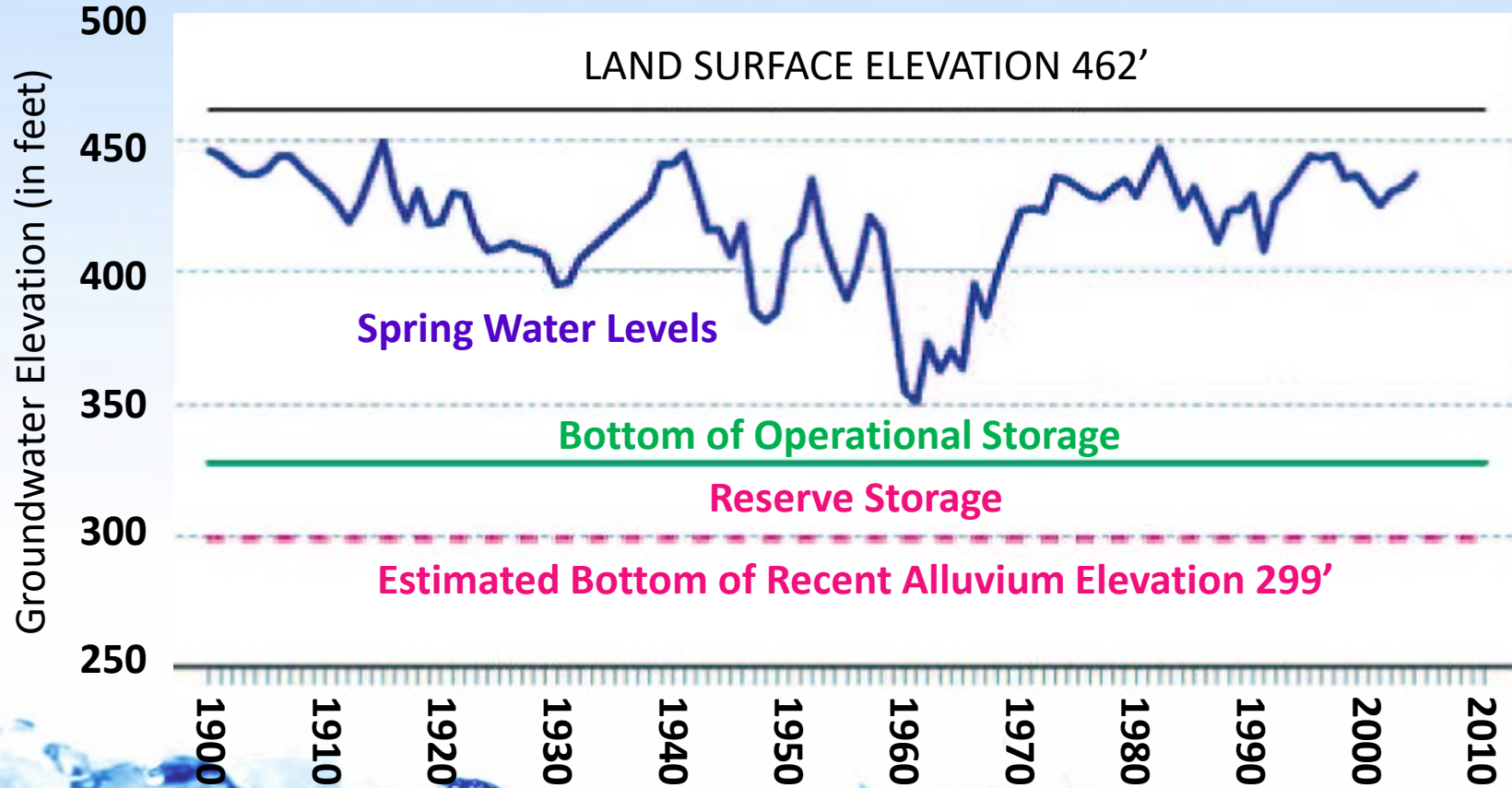






# Groundwater Basin Historical Levels

Livermore Key Well – Mocho Sub-Basin





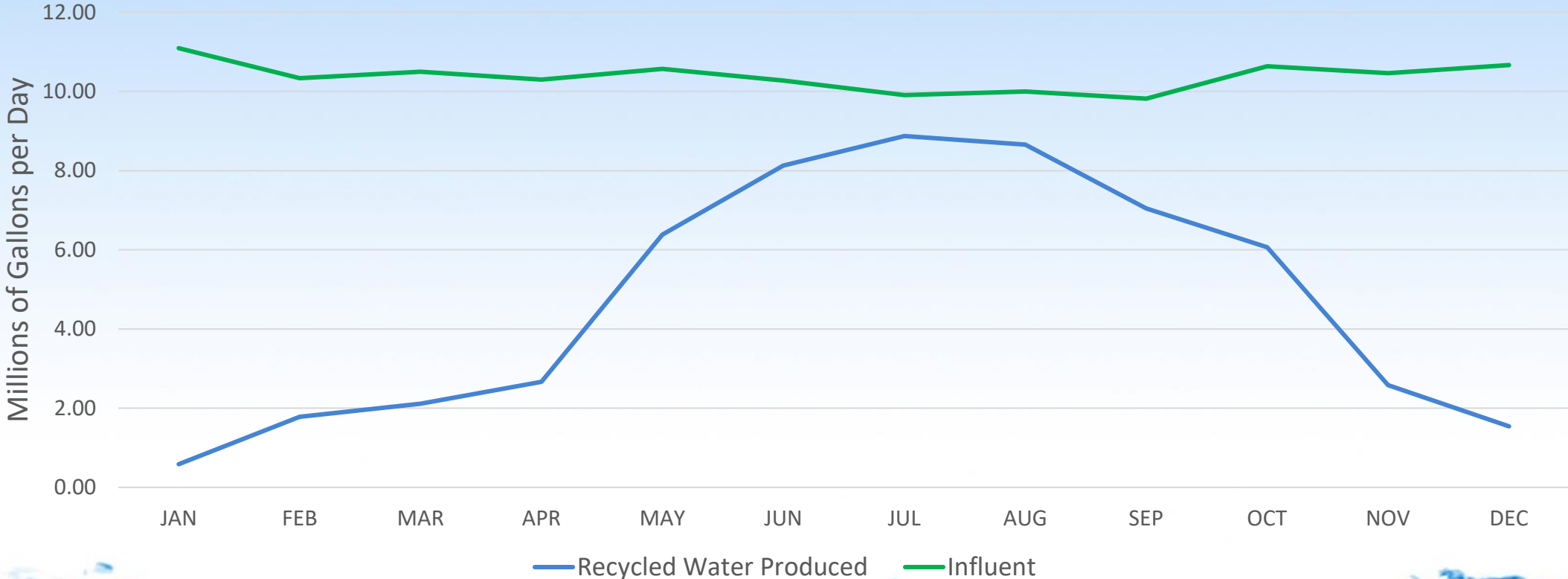
An aerial photograph of Lake Del Valle, a large reservoir situated in a valley. The surrounding hills are covered in dry, golden-brown grass and scattered dark green trees. The lake's water is a clear, light blue. In the lower foreground, there is a small settlement with buildings and a road, along with a green golf course. The overall scene depicts a semi-arid environment.

**Local Runoff - Lake Del Valle (10%)**



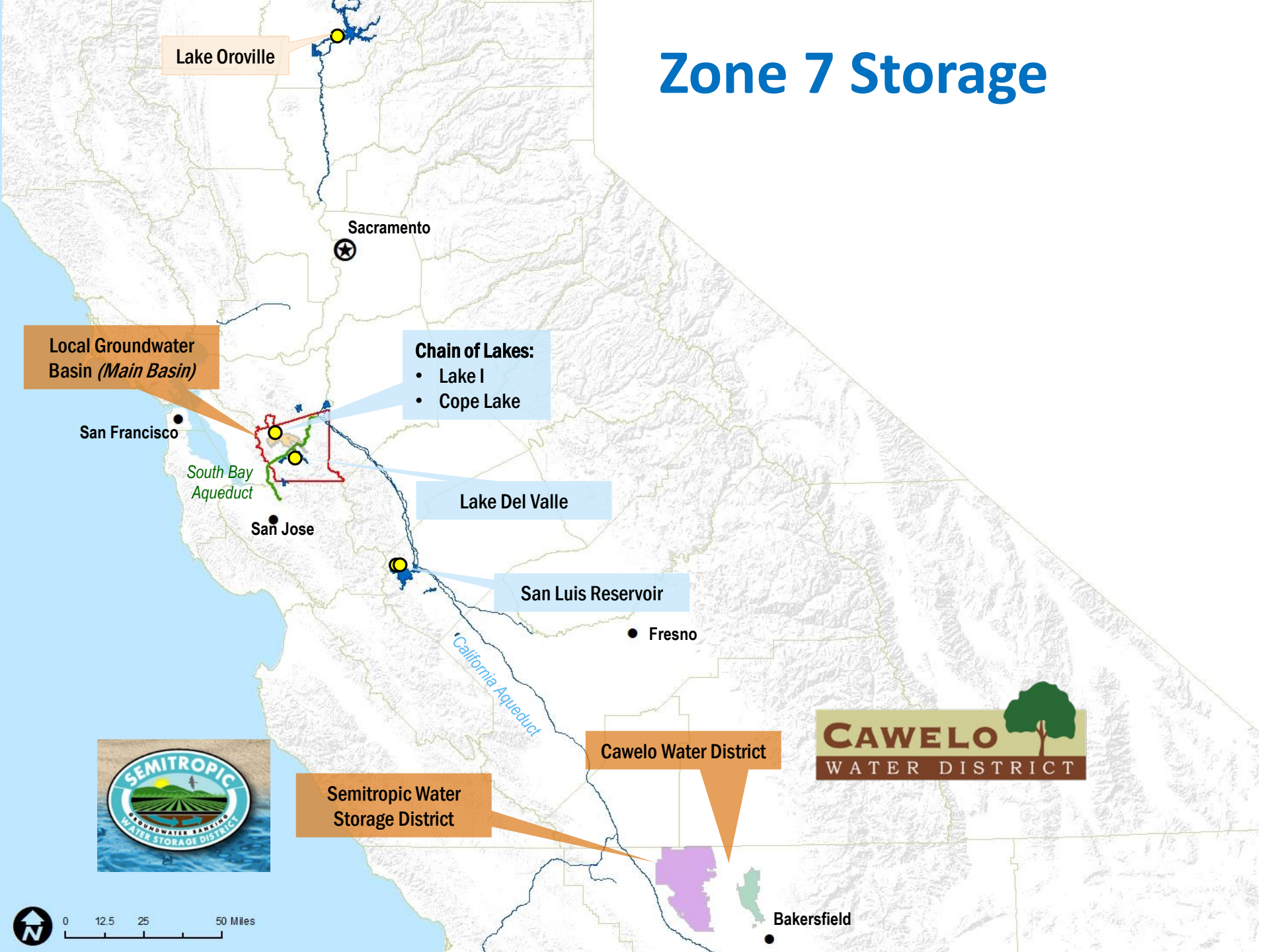
# Recycled Water (9%)

## 2020 DSRSD WWTP Influent and Produced Recycled Water





# Zone 7 Storage



Local Groundwater Basin (Main Basin)

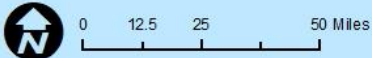
Chain of Lakes:  
• Lake I  
• Cope Lake

Lake Del Valle

San Luis Reservoir

Cawelo Water District

Semitropic Water Storage District





# Above-ground: Surface Water Reservoirs

## OWNED BY DWR



**Lake Del Valle**

7,500 ac ft



**San Luis Reservoir**

10,000-15,000 ac ft

## OWNED BY ZONE 7



**Lake I**

10,800 (26,800 total) ac ft



**Cope Lake**

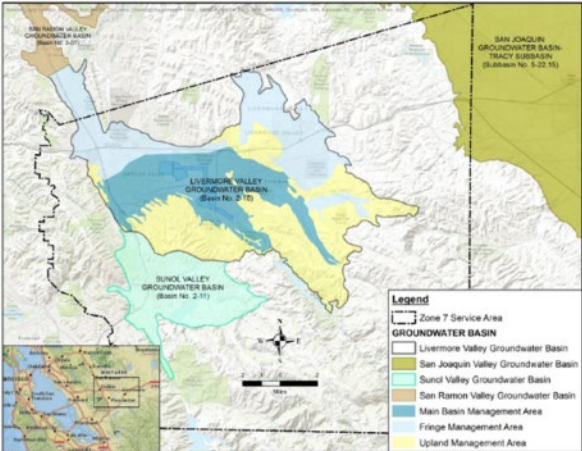
4,500 ac ft





# Below-ground: Groundwater Aquifers

## MANAGED BY ZONE 7



### Livermore Valley Groundwater Basin

126,000 ac ft  
(+128,000 of emergency storage)

## KERN COUNTY GROUNDWATER BANKS



### Semitropic Water Storage District

78,000 ac ft

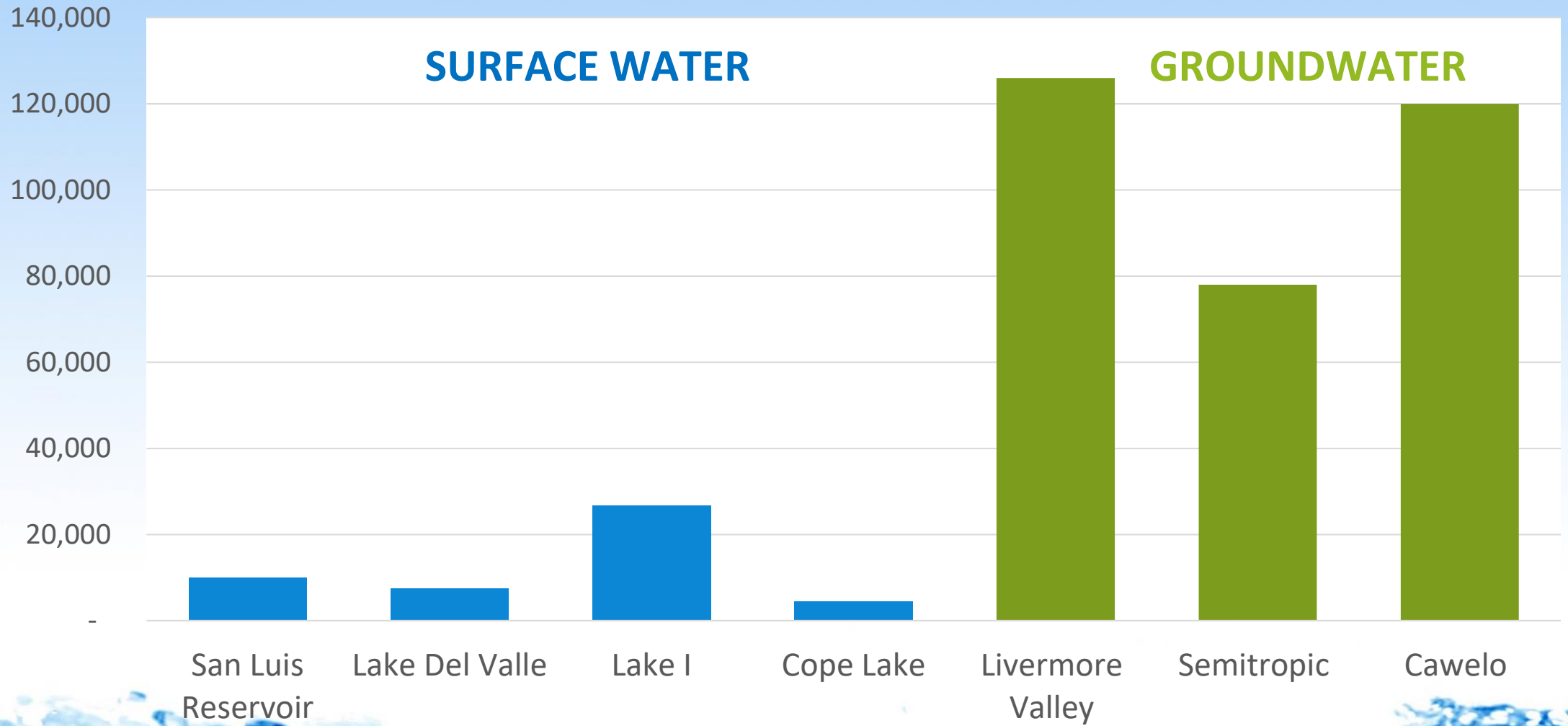


### Cawelo Water District

120,000 ac ft



# Zone 7 Storage





# Banking Water– Wet Years

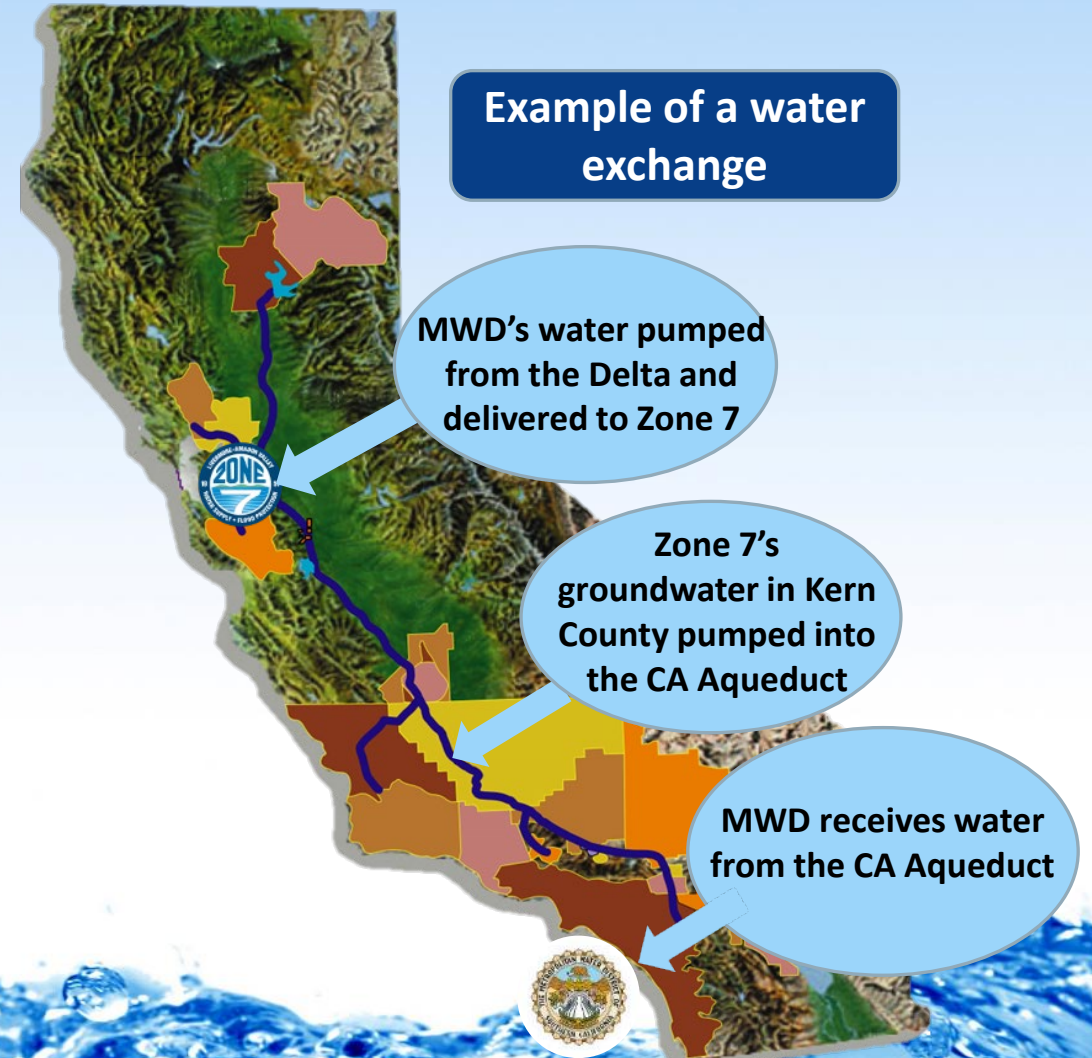
- » Semitropic or Cawelo farmers use Zone 7's water instead of groundwater, or
- » Zone 7 water is placed in spreading ponds or recharge basins





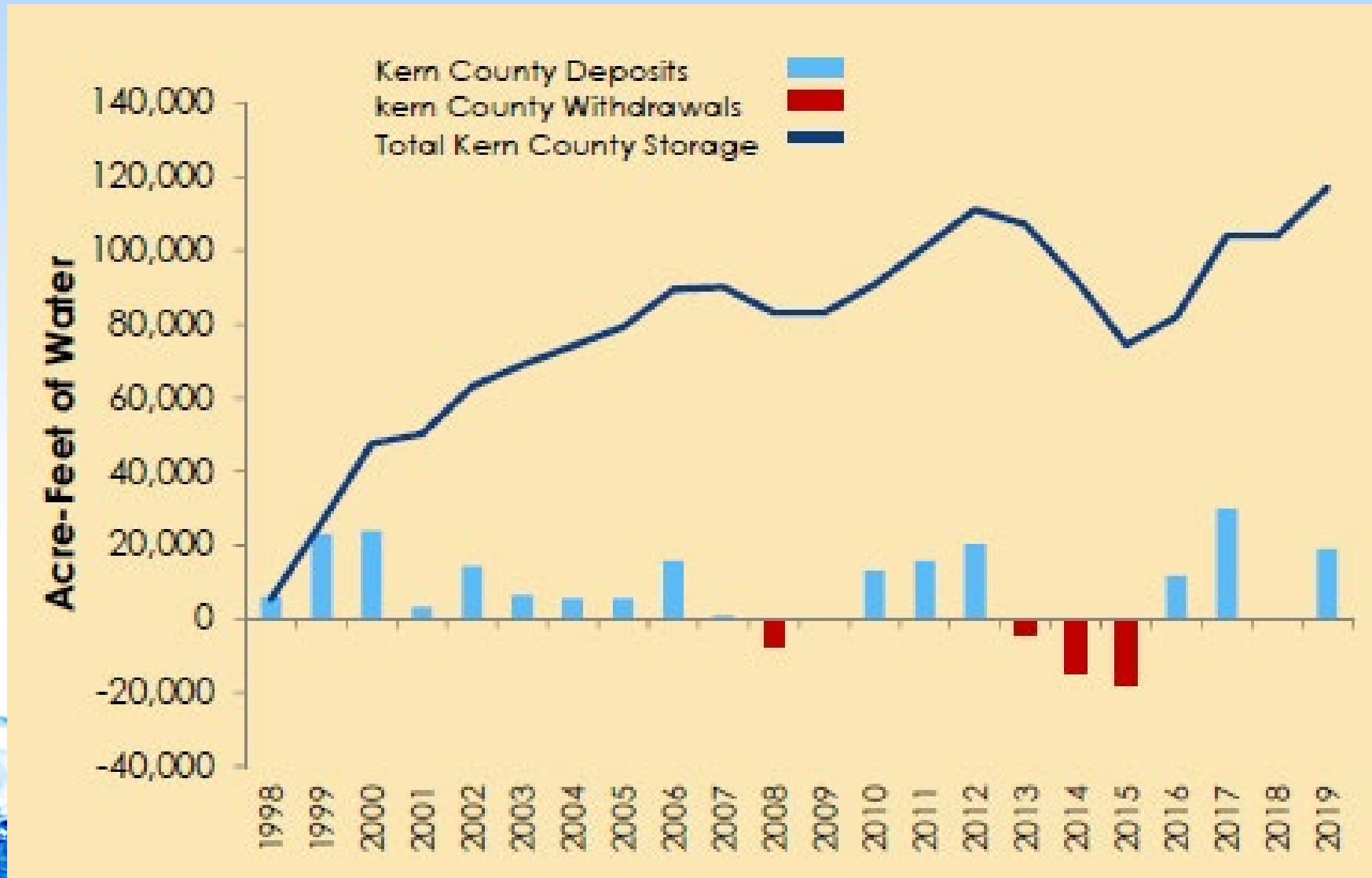
# Withdrawing Water from the Bank – Dry Years

- » Do not pump water from south to north.
- » Water withdrawal from banking programs is done through “exchanges”.
- » A similar approach is used for San Luis Reservoir





# Groundwater Bank Account







**Questions?**



# Managing Supply & Demand

*March 23, 2021 - Board Workshop*



**Dublin San Ramon  
Services District**

*Water, wastewater, recycled water*

**Jan Lee**





# Annual Sustainability Report

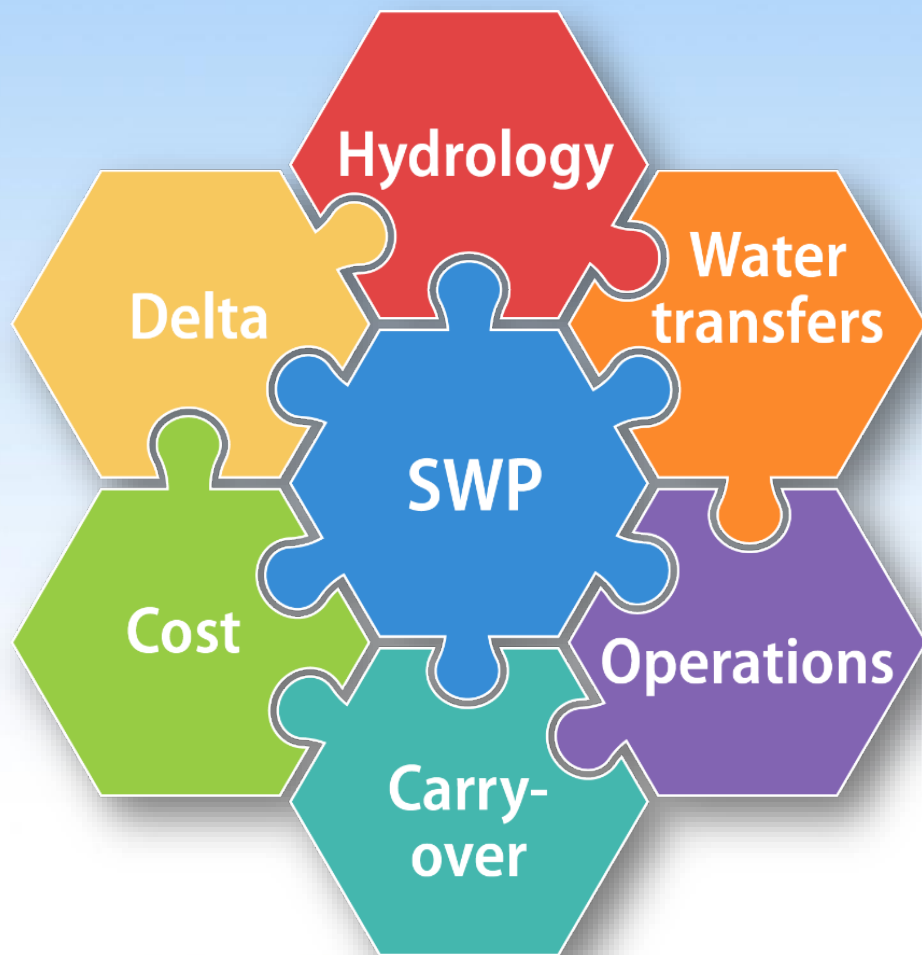


Table 4: Comparison of Supplies and Demands: Next Five Years

SUPPLIES VS DEMANDS	ACTUAL						PROJECTIONS					
	2019		2020		2021		2022		2023		2024	
Acre-Feet	2019		2020		2021		2022		2023		2024	
Hydrologic Year Equivalent	2002		2015		1977		Average		Average		Average	
Table A Allocation	75%		15%		10%		49%		49%		49%	
Incoming Supply <sup>(a)</sup>	68,600		17,000		14,100		48,700		46,700		46,700	
Water Supply from Storage <sup>(b)</sup>	13,500		38,300		40,200		20,400		23,600		22,800	
Total Water Supply	82,100		55,300		54,300		69,100		70,300		69,500	
Direct Water Demand <sup>(c)</sup>	40,700		45,700		45,700		46,200		46,500		46,800	
Deposits into Storage and Losses <sup>(d)</sup>	41,400		9,600		8,600		22,900		23,800		22,700	
% of Demand Delivered	100%		100%		100%		100%		100%		100%	

Notes:

- (a) From Table 2: SWP (Table A), LDV Yield, and transfers.
- (b) From Table 2: SWP Carryover, LDV Carryover, GW Production, and Semitropic/Cawelo.
- (c) From Table 1: Treated and Agricultural/Untreated Demands (direct use).
- (d) From Table 1: Storage water placed in LDV and SWP as carryover, groundwater recharge, and water stored in Semitropic/Cawelo. A portion of this goes towards operational losses.



# Piecing the Puzzle Together

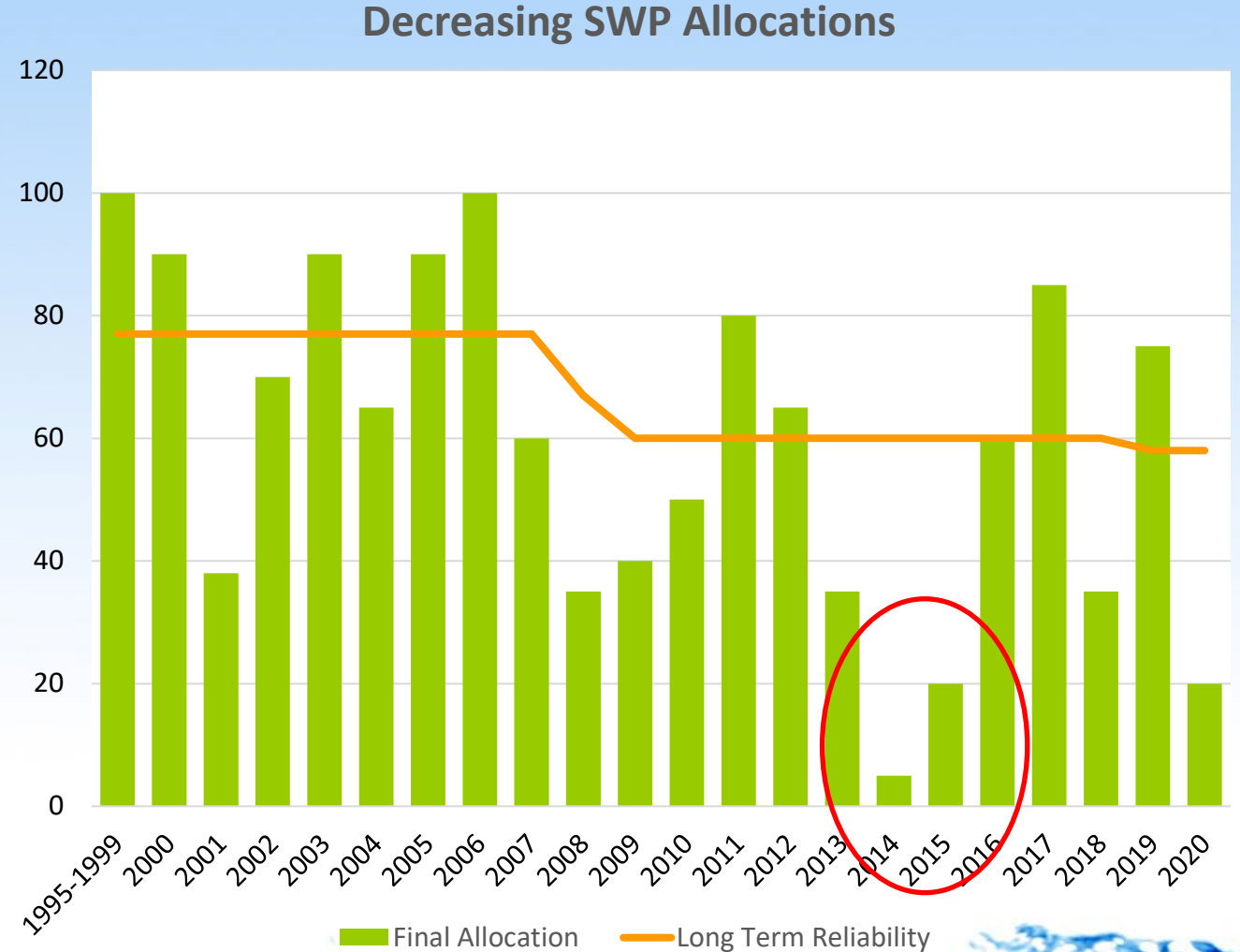
- » Hydrology
- » SWP Allocation
- » Delta Restrictions
- » Operations
- » Supplemental Supplies
- » Multi-year Planning
- » Cost





# Piecing the Puzzle Together

- » Hydrology
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# Piecing the Puzzle Together

- » Hydrology
- » SWP Allocation
- » **Delta Restrictions**
- » Operations
- » Supplemental Supplies
- » Multi-year Planning
- » Cost

Delta Smelt





# Piecing the Puzzle Together

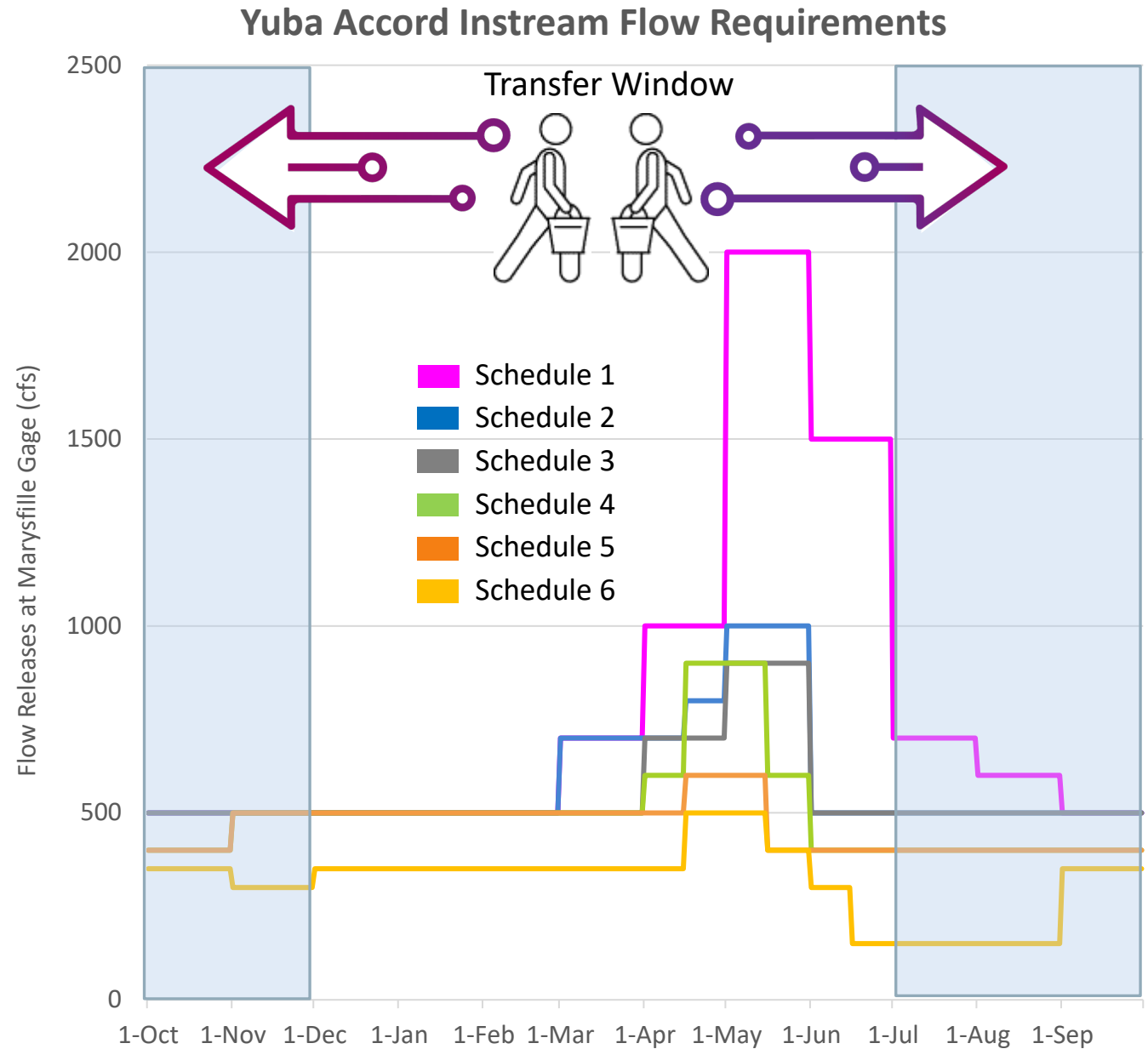
- » Hydrology
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# Piecing the Puzzle Together

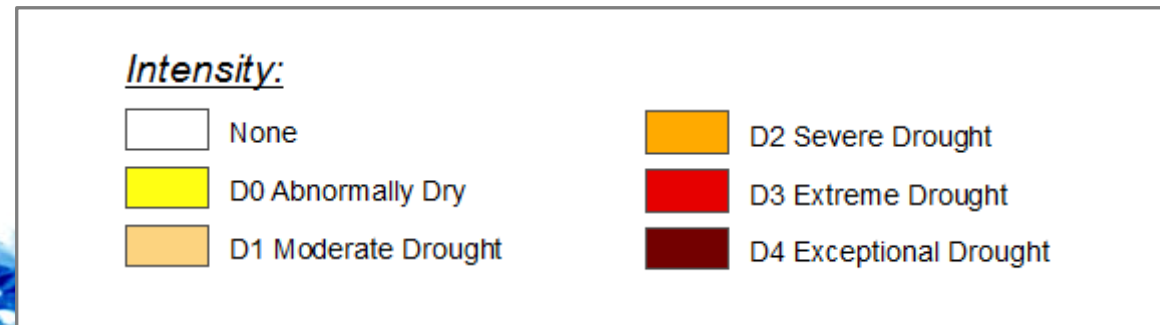
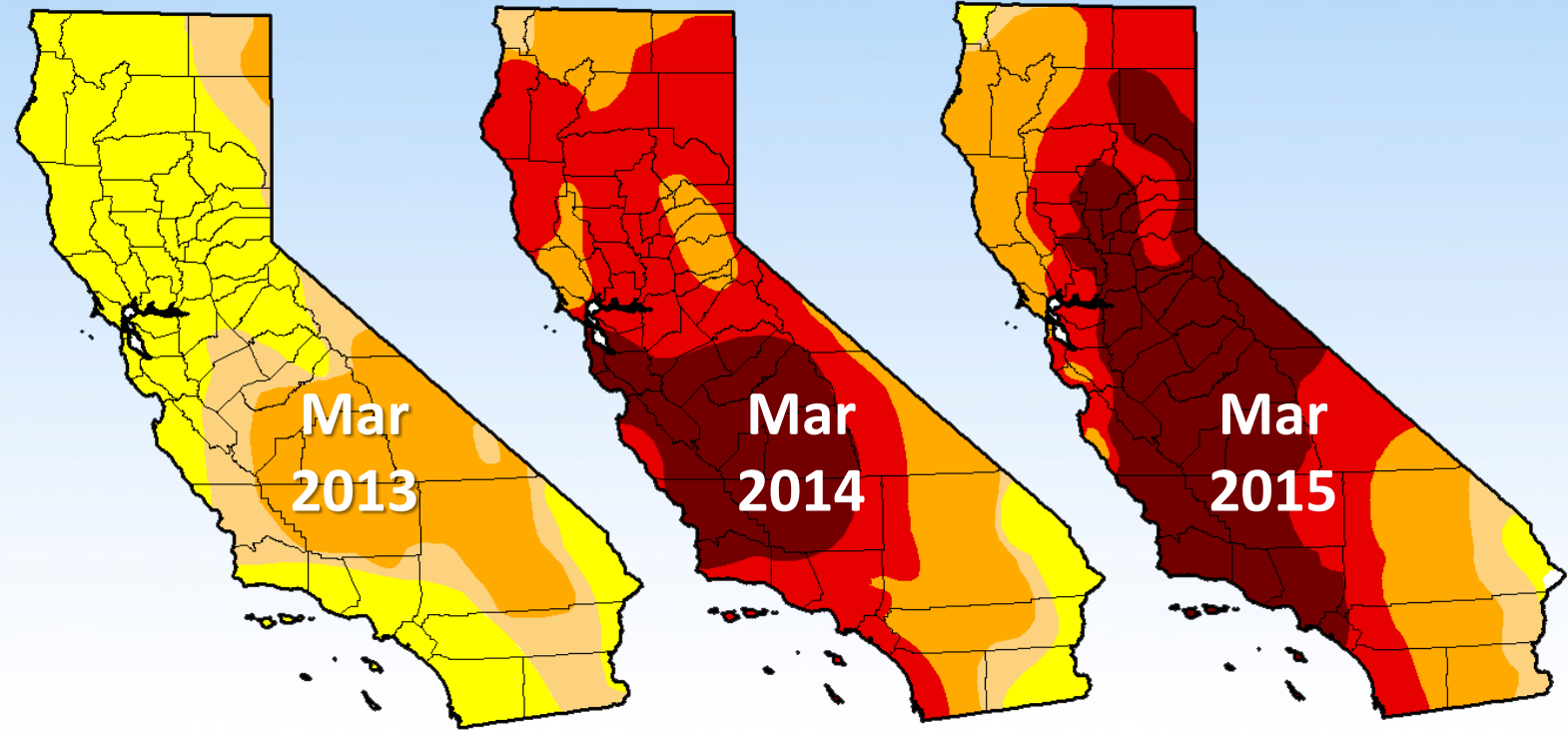
- » Hydrology
- » SWP Allocation
- » Delta Restrictions
- » Operations
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# Piecing the Puzzle Together

- » Hydrology
- » SWP Allocation
- » Delta Restrictions
- » Operations
- » Supplemental Supplies
- » **Multi-year Planning**
- » Cost





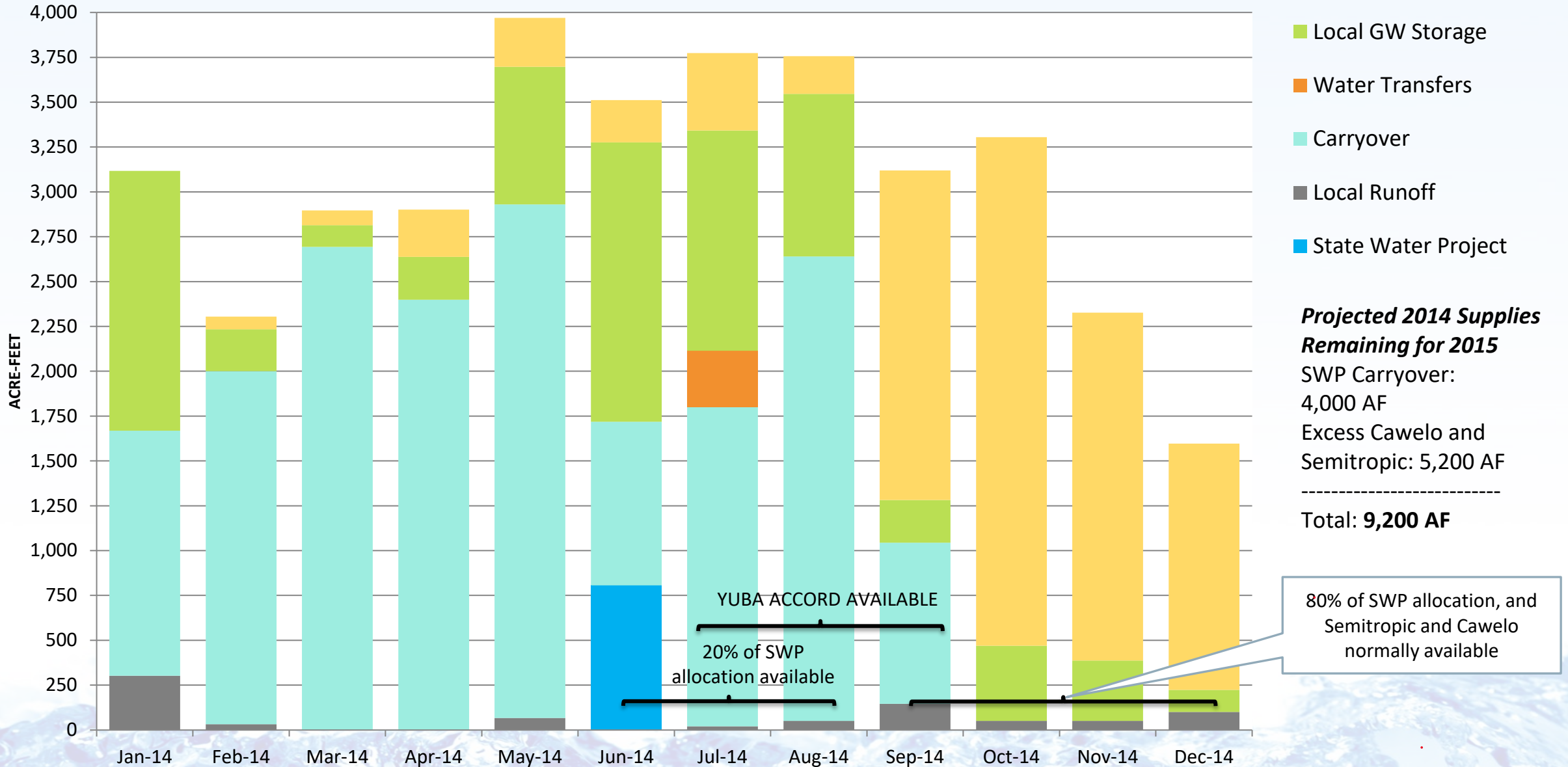
# Putting the Puzzle Together

- » Hydrology
- » SWP Allocation
- » Delta Restrictions
- » Operations
- » Supplemental Supplies
- » Multi-year Planning
- » Cost



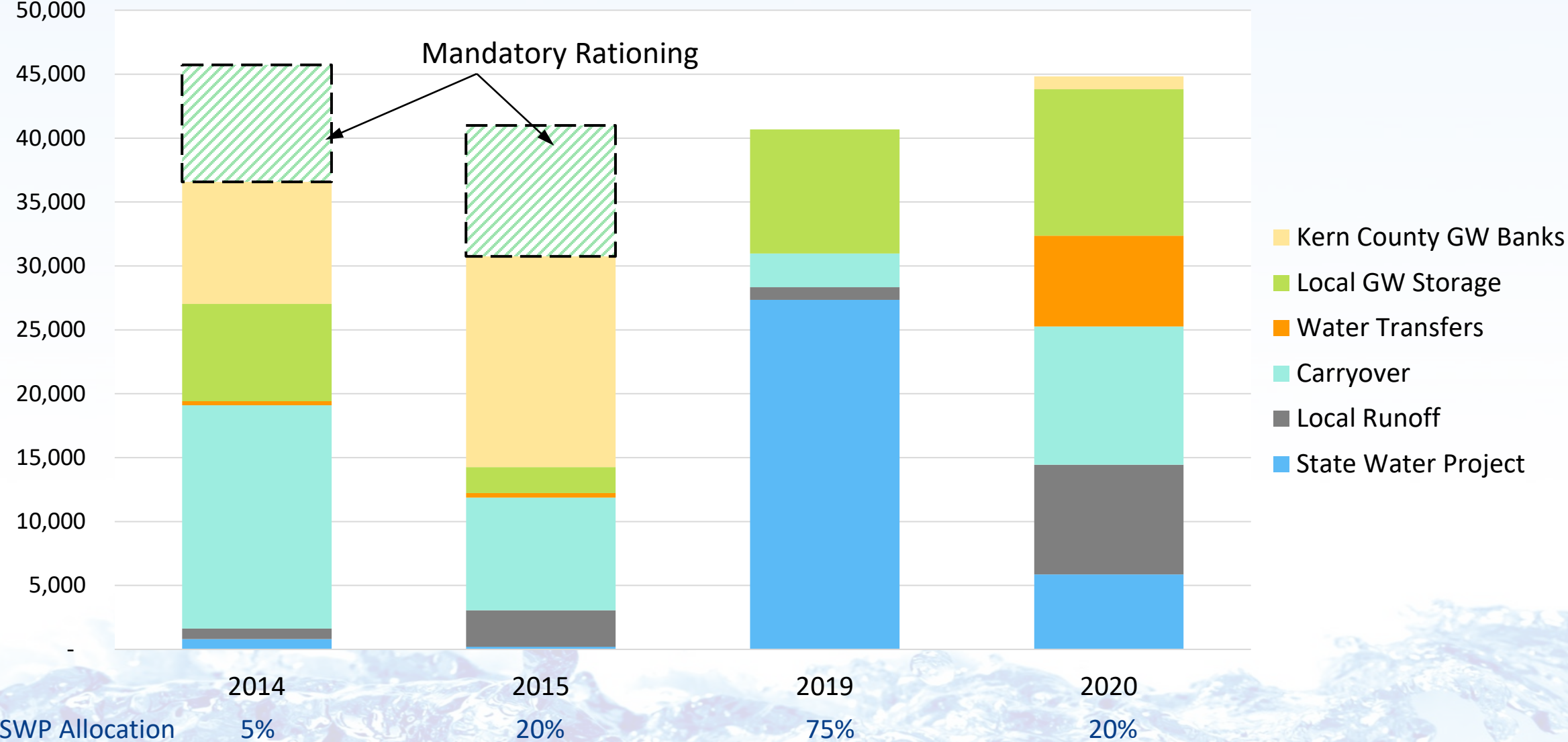


# Zone 7 Supplies – Actuals for 2014





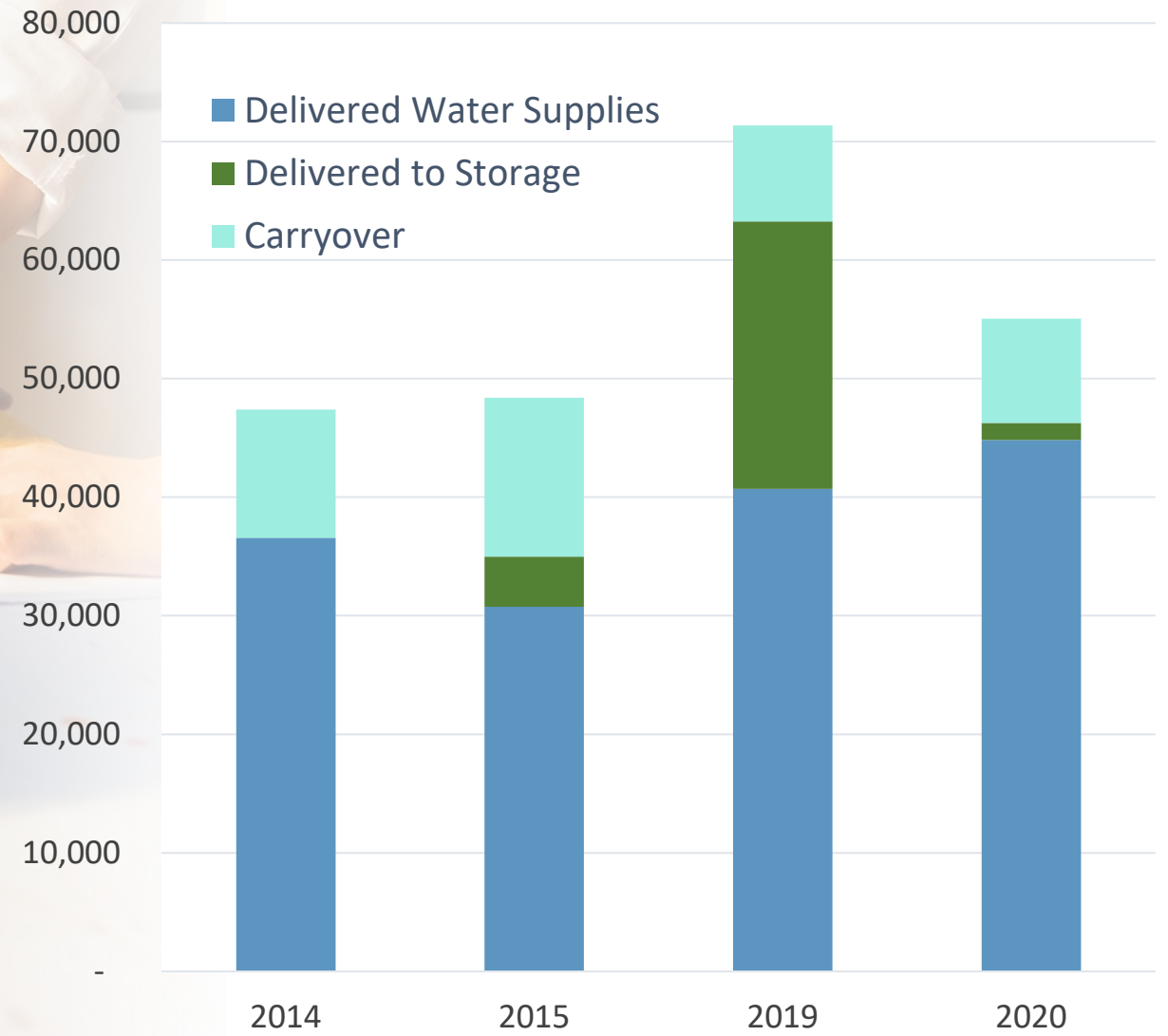
# Delivered Water Supply Supplies: 2014-2015, 2019-2020







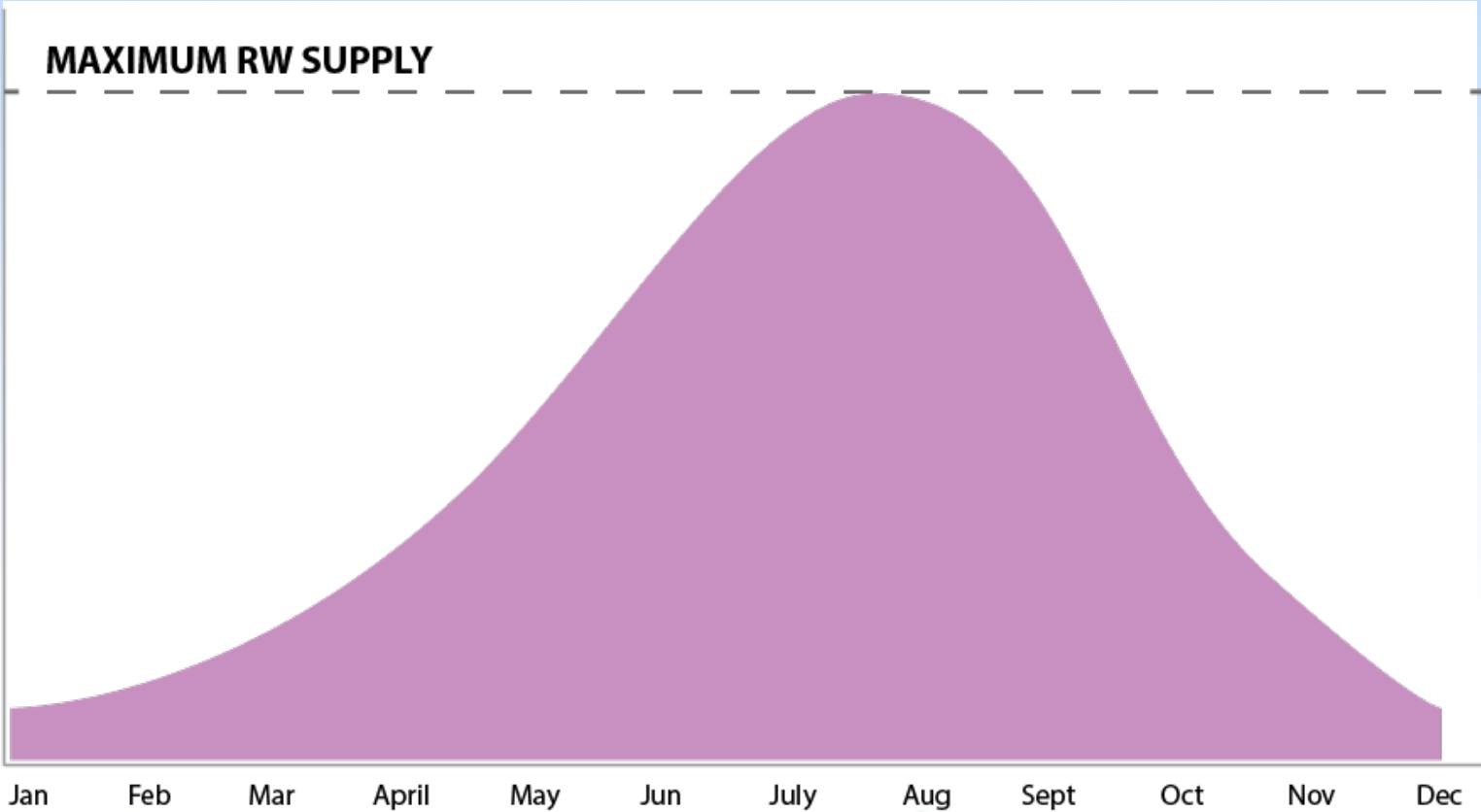
## Planning for the Next Year





# Managing Recycled Water Supplies and Demand

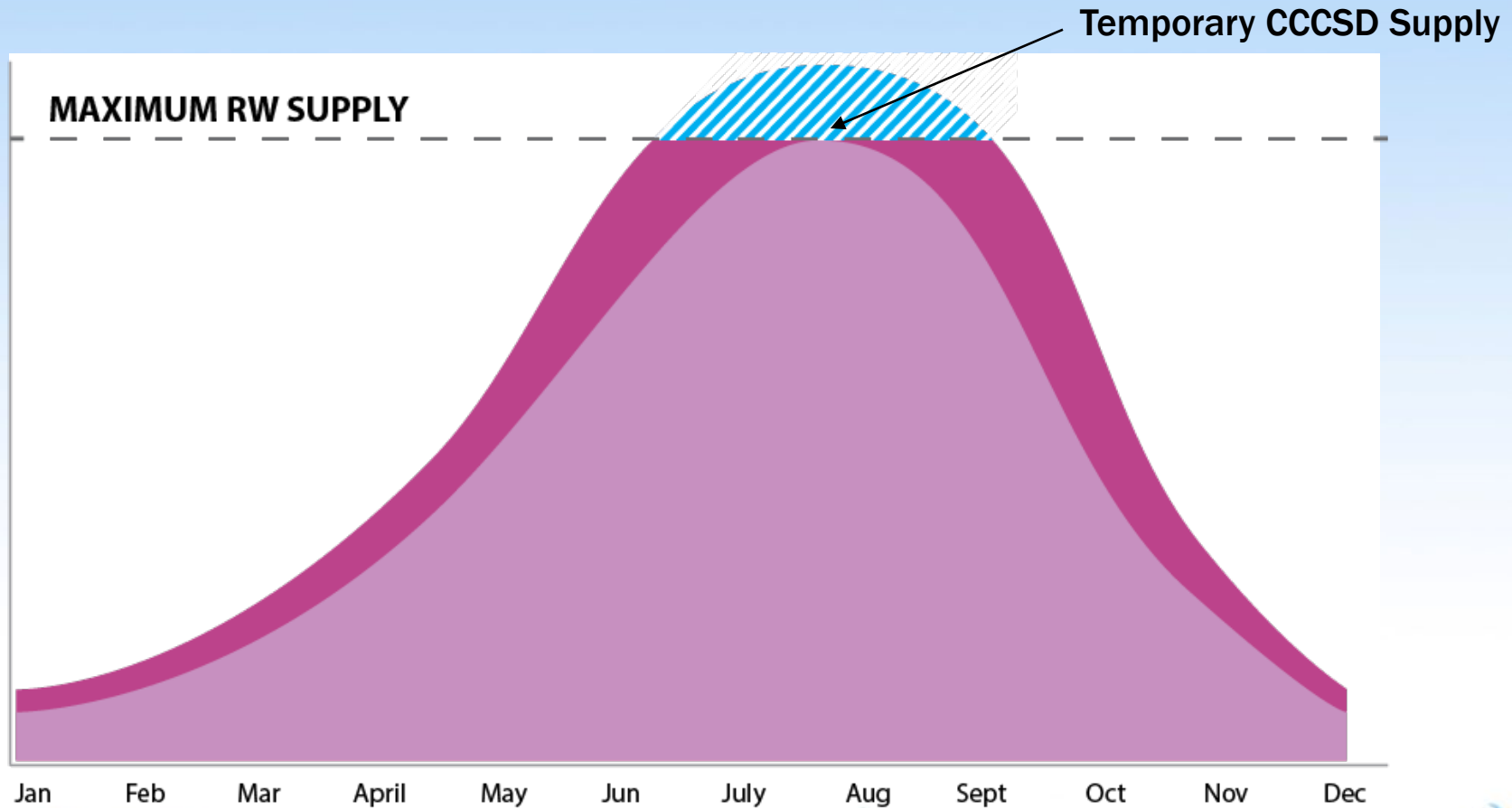
WWTP  
Average Dry  
Weather Flow





# Supplemental Recycled Water Supplies

WWTP Influent Limit:  
~10.3 mgd





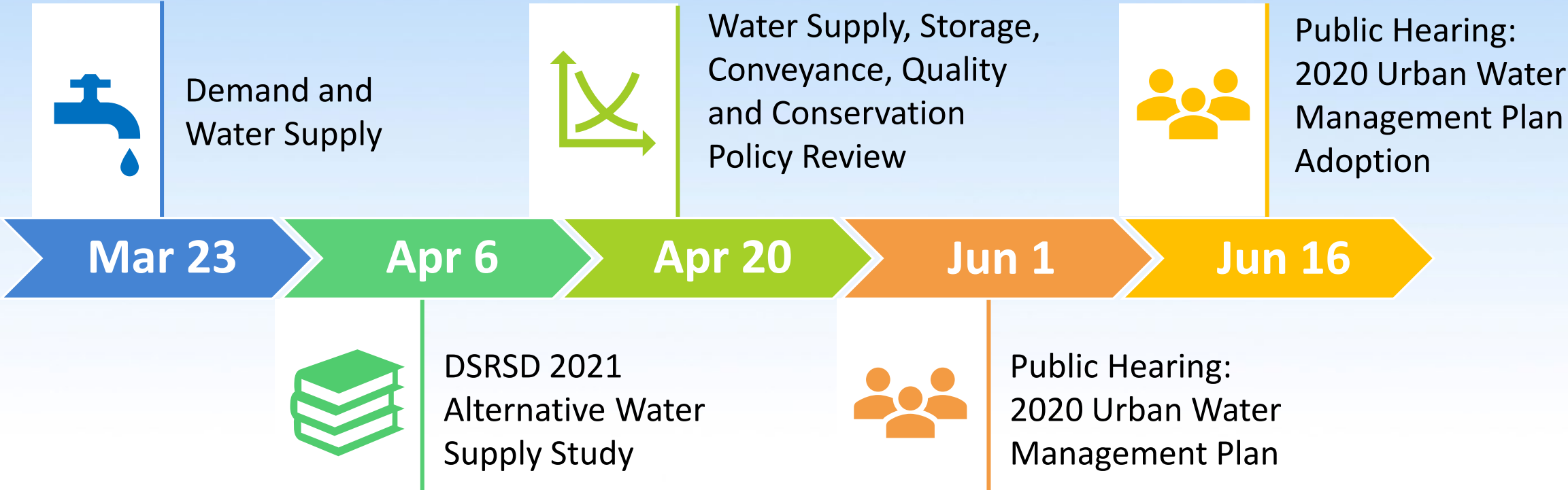
# Key Takeaways

- » Conservation is a way of life
- » Integrated approach to managing recycled water and potable water
- » 70% of Tri-Valley supply is imported through the Delta
- » Surface water and groundwater storage facilities are critical components of Zone 7's water system
- » Multiple factors go into creating a water operations plan each year
- » There is no “normal” water year type
- » Best solutions will complement existing puzzle pieces





# Next Steps





**Questions?**