

SOUTHERN CALIFORNIA GOLF & WATER SUMMIT

August 18, 2022



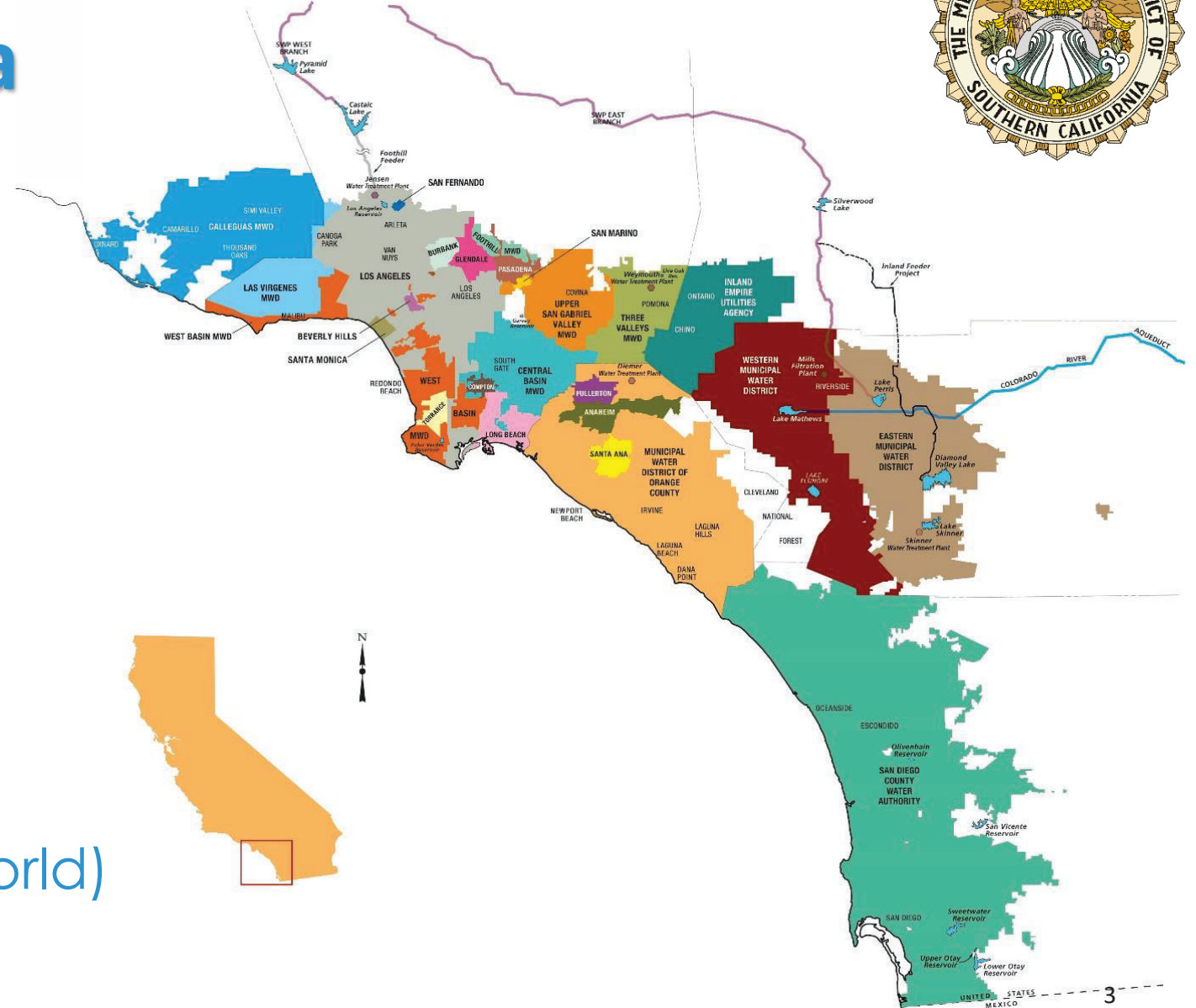
Southern California's Water “Double Bogey”



Deven Upadhyay
Assistant General Manager
Metropolitan Water District

The Metropolitan Water District of Southern California

- Nation's largest wholesale water provider
- Service area:
 - 19 million people
 - 5,200 square miles
 - parts of six counties
- 26 member agencies
- Supports \$1.6 trillion regional economy (ranks 11th in the world)



The Role of Metropolitan for Southern California



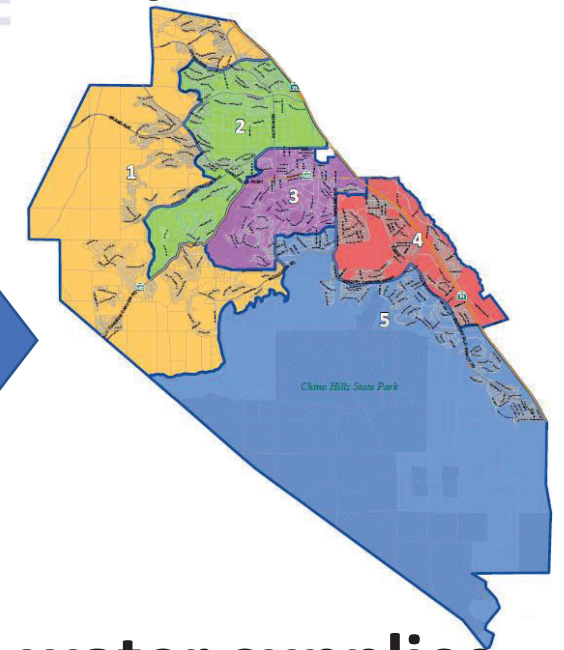
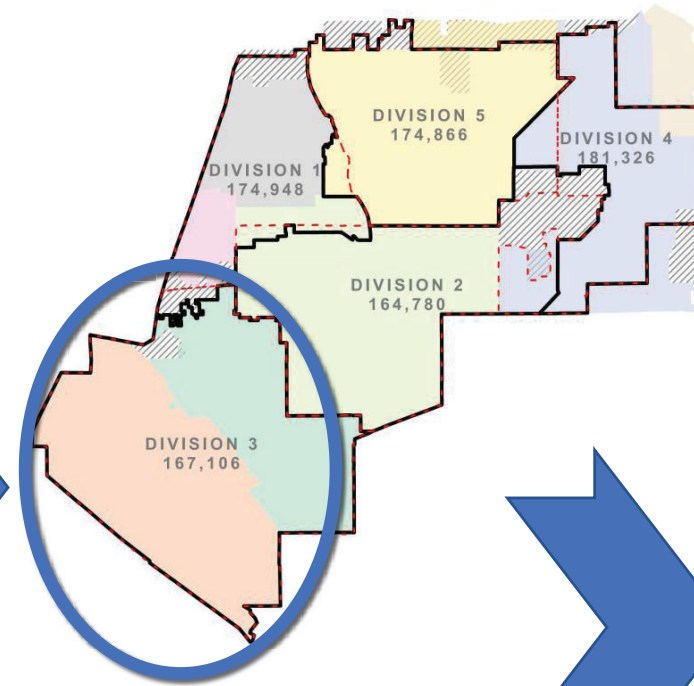
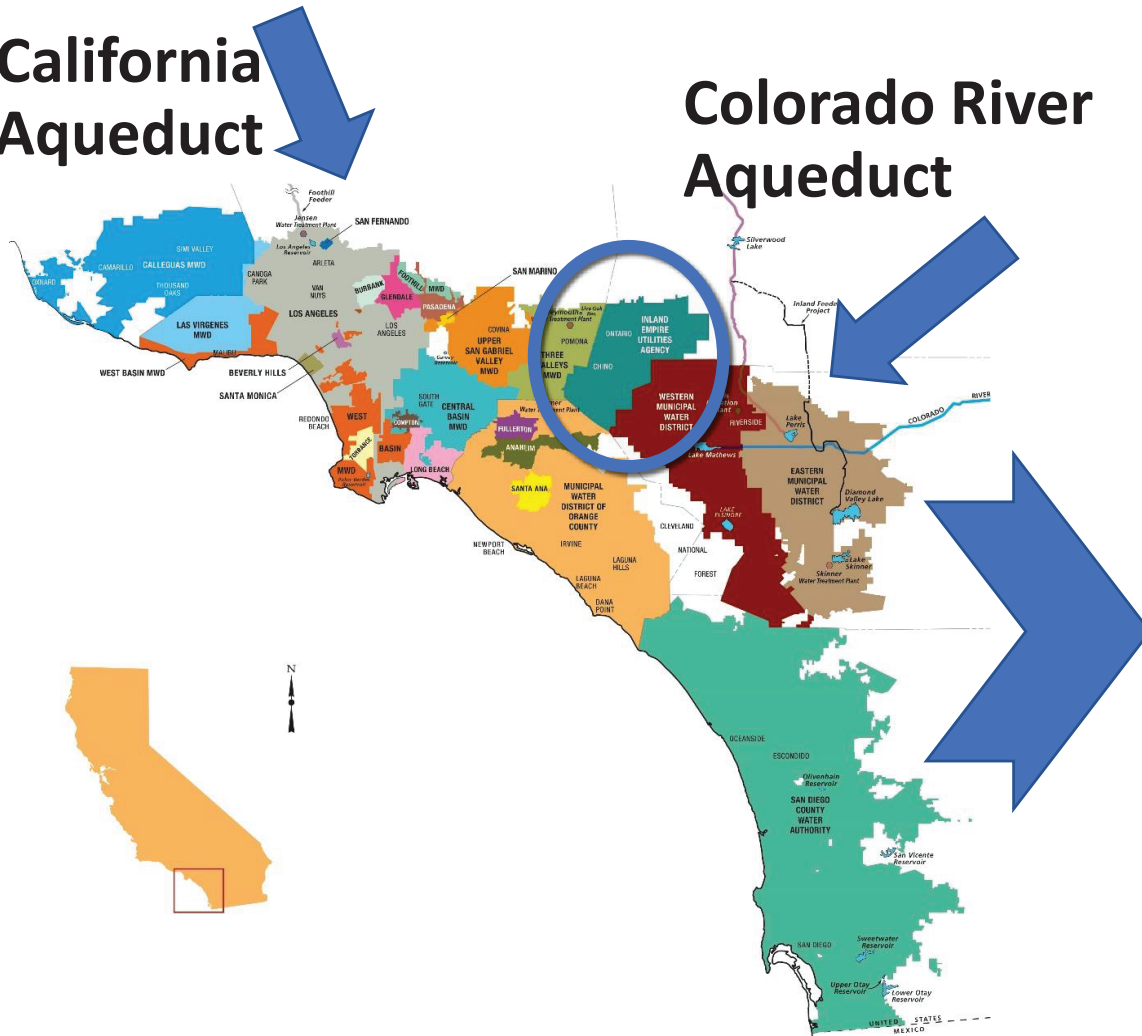
The Way Water Moves in Southern California

California
Aqueduct

Colorado River
Aqueduct

Member Agency:
Inland Empire Utilities Agency

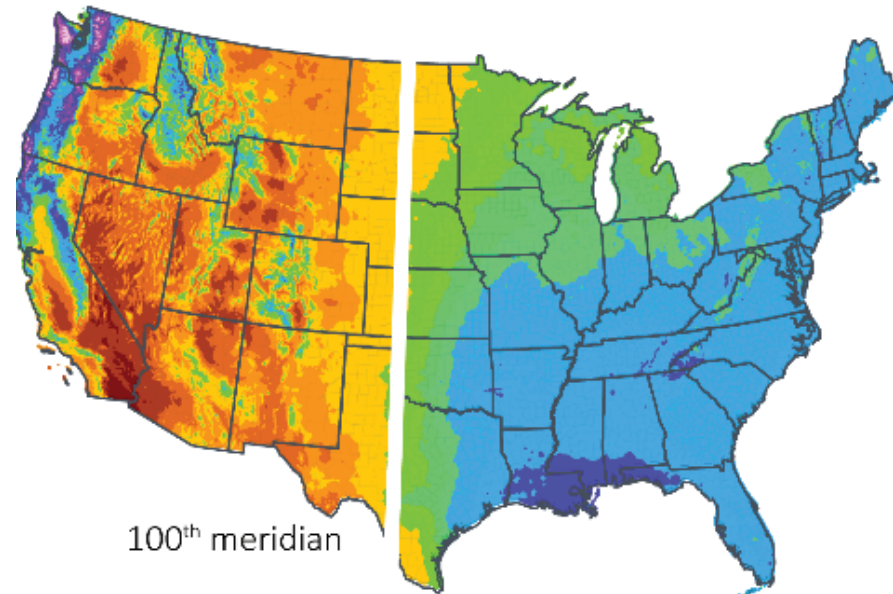
Retail Agency:
City of Chino Hills



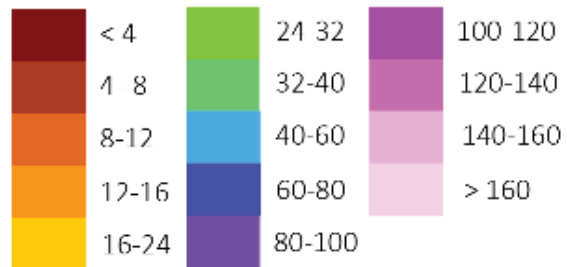
Metropolitan supplies about half of the region's potable water supplies

California's "Normal" Climate is Abnormal

Average Annual Precipitation (1981-2010)

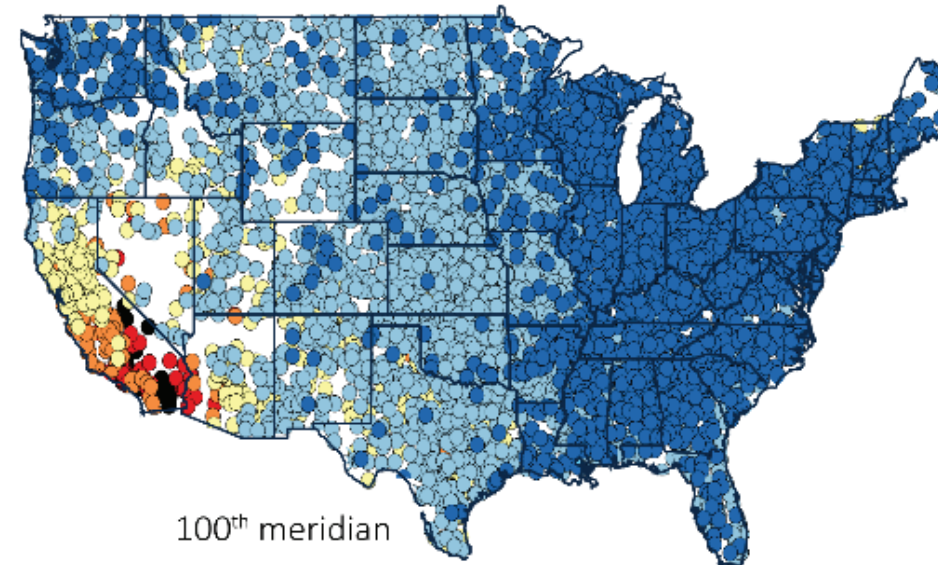


Annual Precipitation (inches)

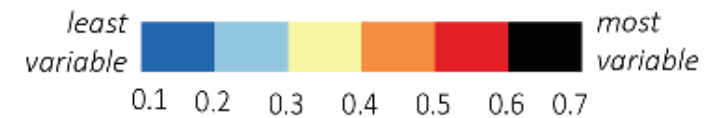


Left map source: Oregon State University (2015)

Rainfall Variability



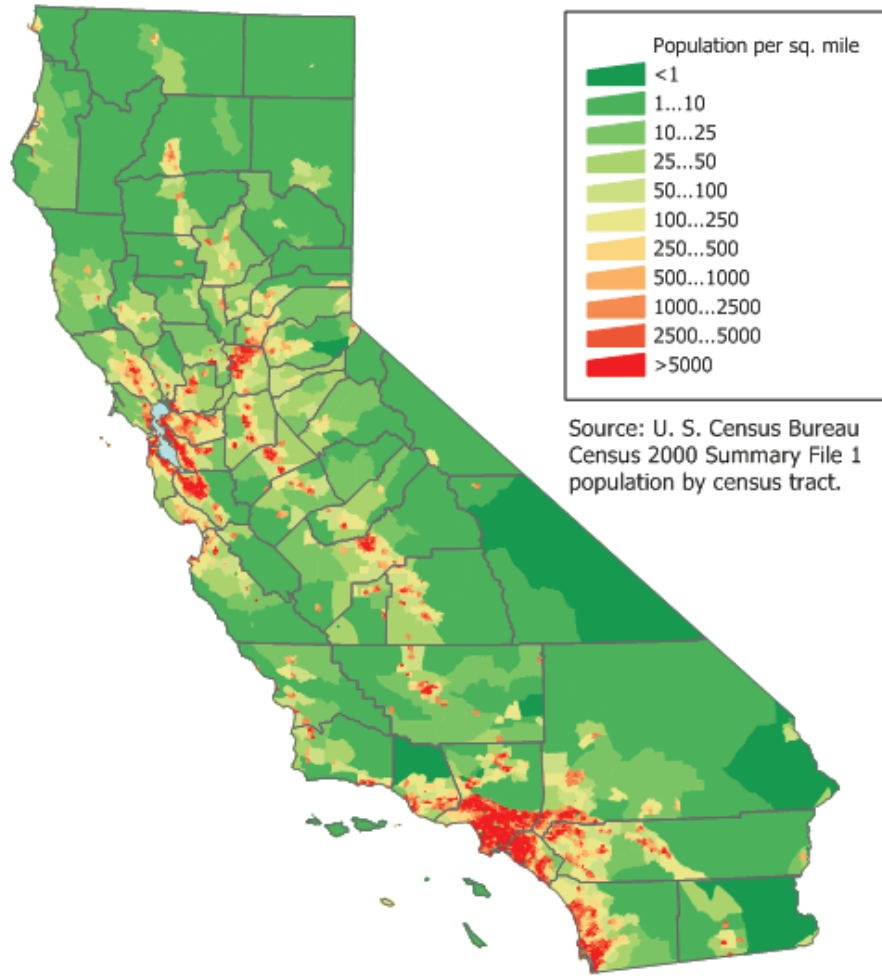
Rainfall Variability



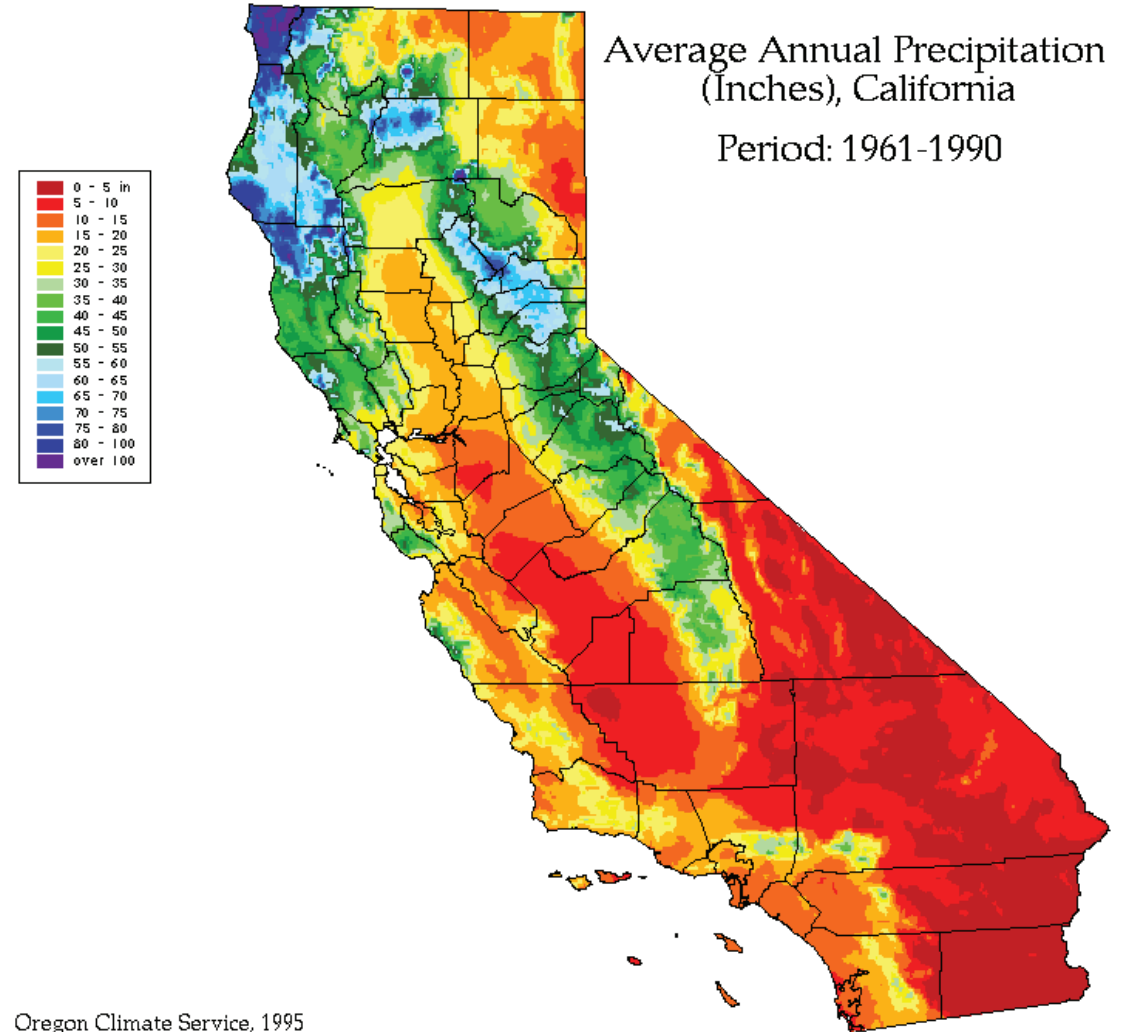
Right map source: Dettinger (2011)

California's Urban Water Mismatch

Population



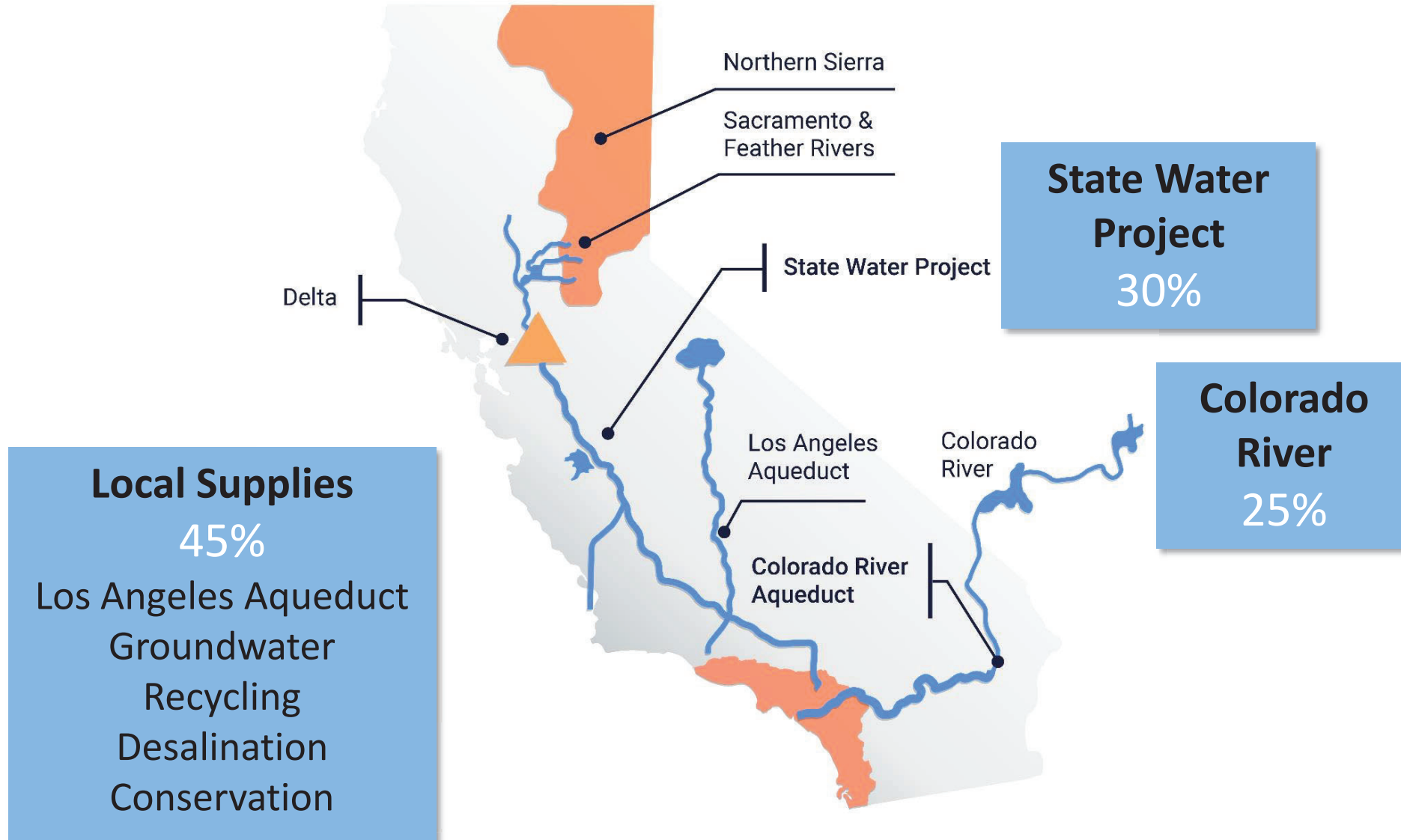
Precipitation



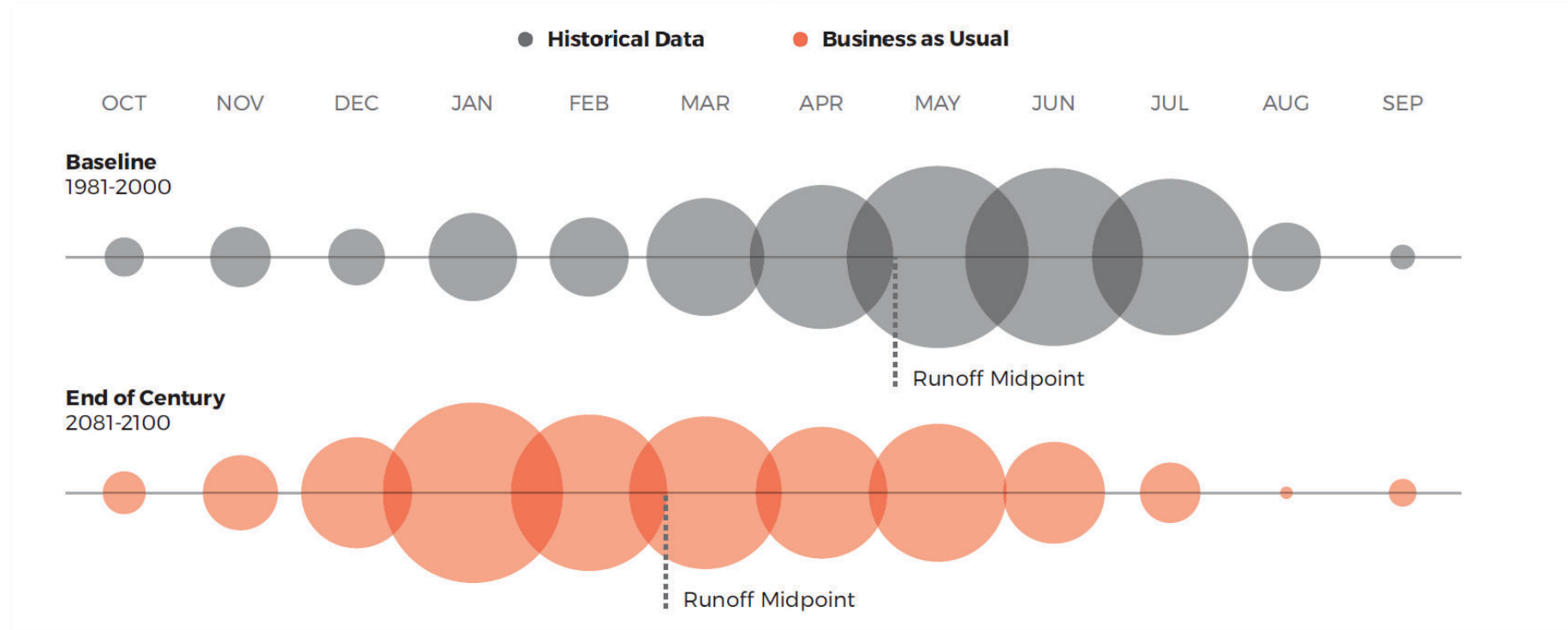
Oregon Climate Service, 1995

Securing Water for Southern California

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Challenges of Climate Change



Future expectations:

- Less snow/more fire
- Big atmospheric river events get bigger
- Flooding increases dramatically
- Dry years (probably) get drier

Reich, K.D., *et al.* (2018). Climate Change in the Sierra Nevada: California's Water Future. UCLA.

Imported Supplies are Stressed

Lowest 3-year deliveries from
State Water Project (No. Cal.)

Shortage declared for
Lower Colorado River Basin



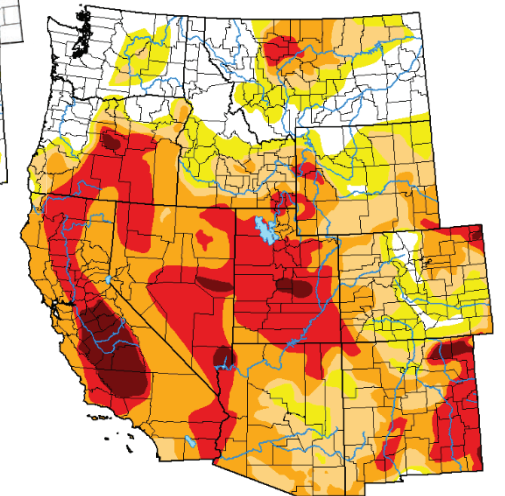
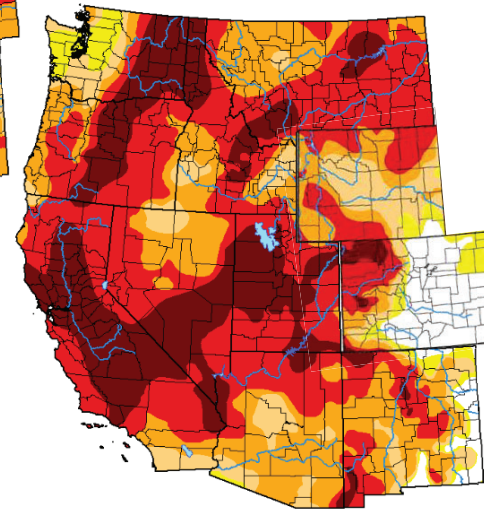
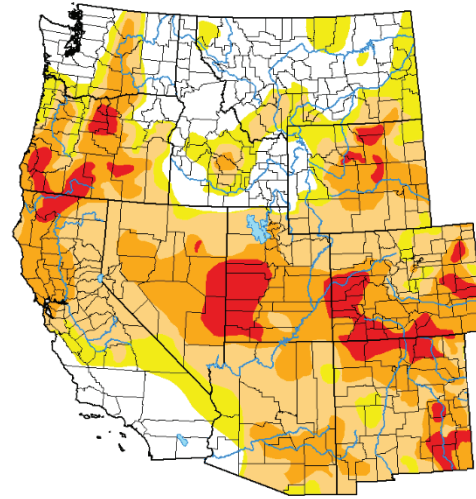
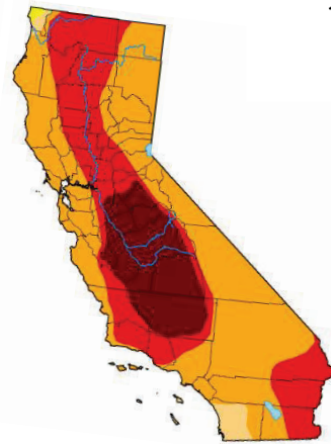
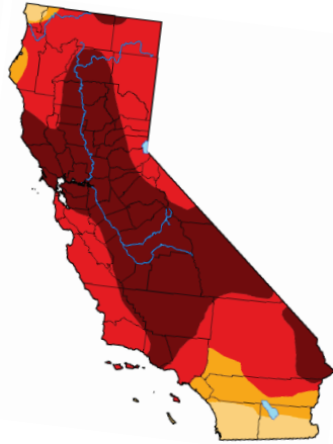
Lake Oroville



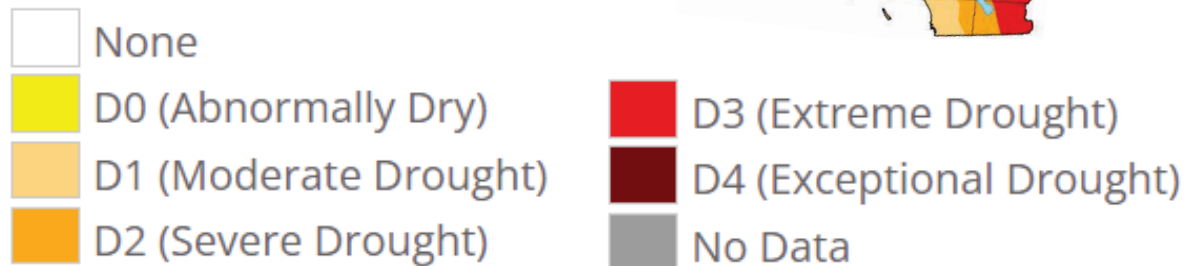
Lake Mead

U.S. Drought Monitor: August 2020-2021-2022

California



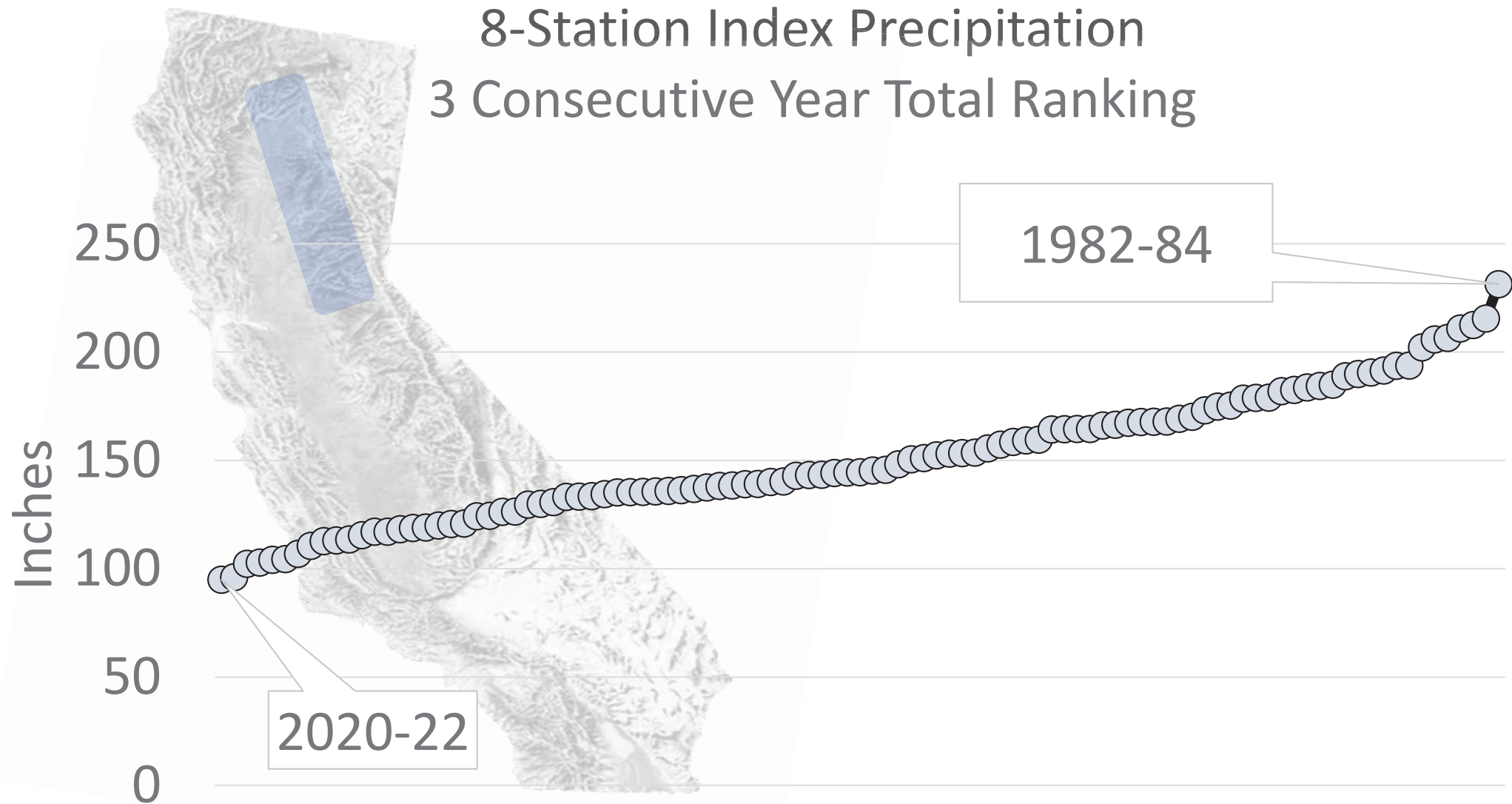
Western U.S.



Driest Three-Year Sequence of Record

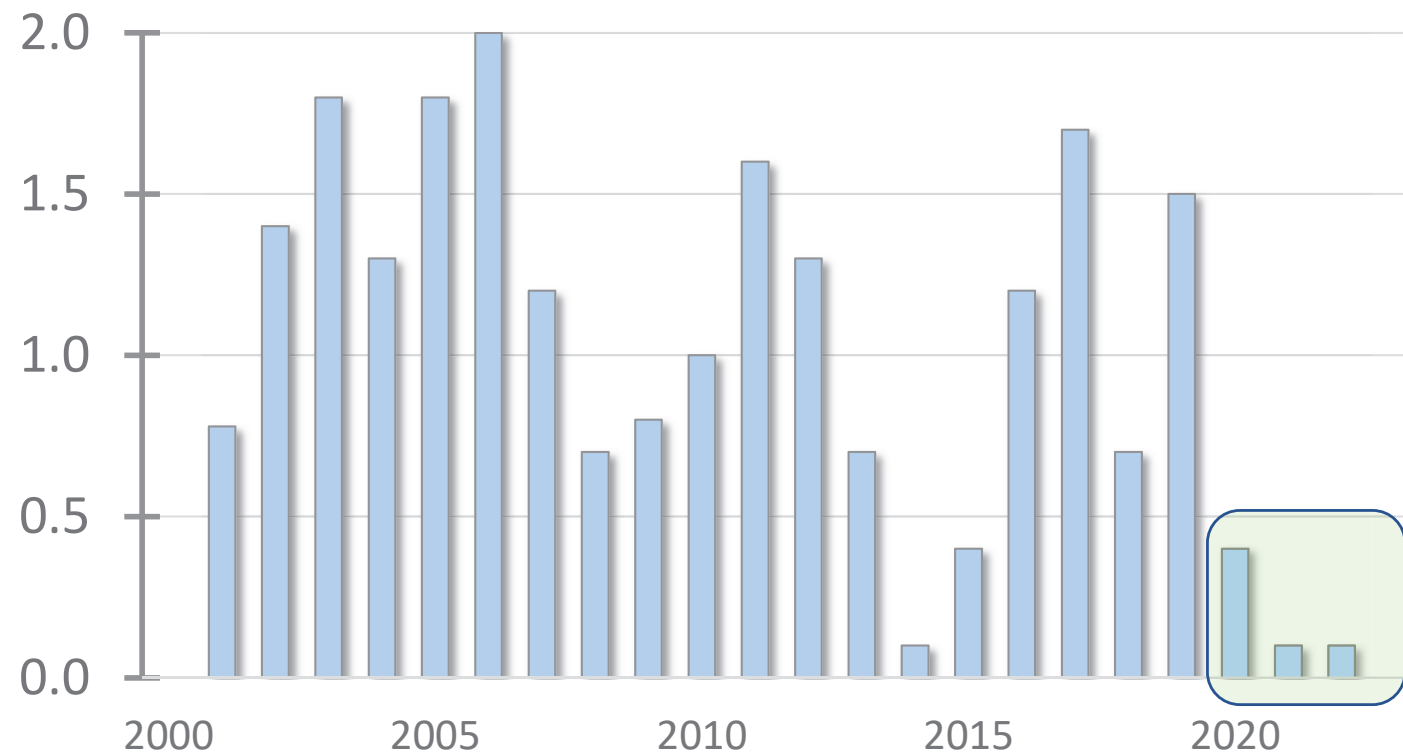
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8-Station Index Precipitation
3 Consecutive Year Total Ranking



Drought Effects Most Acute Today on Northern California Supply

Historic SWP Deliveries to Metropolitan (million AF)

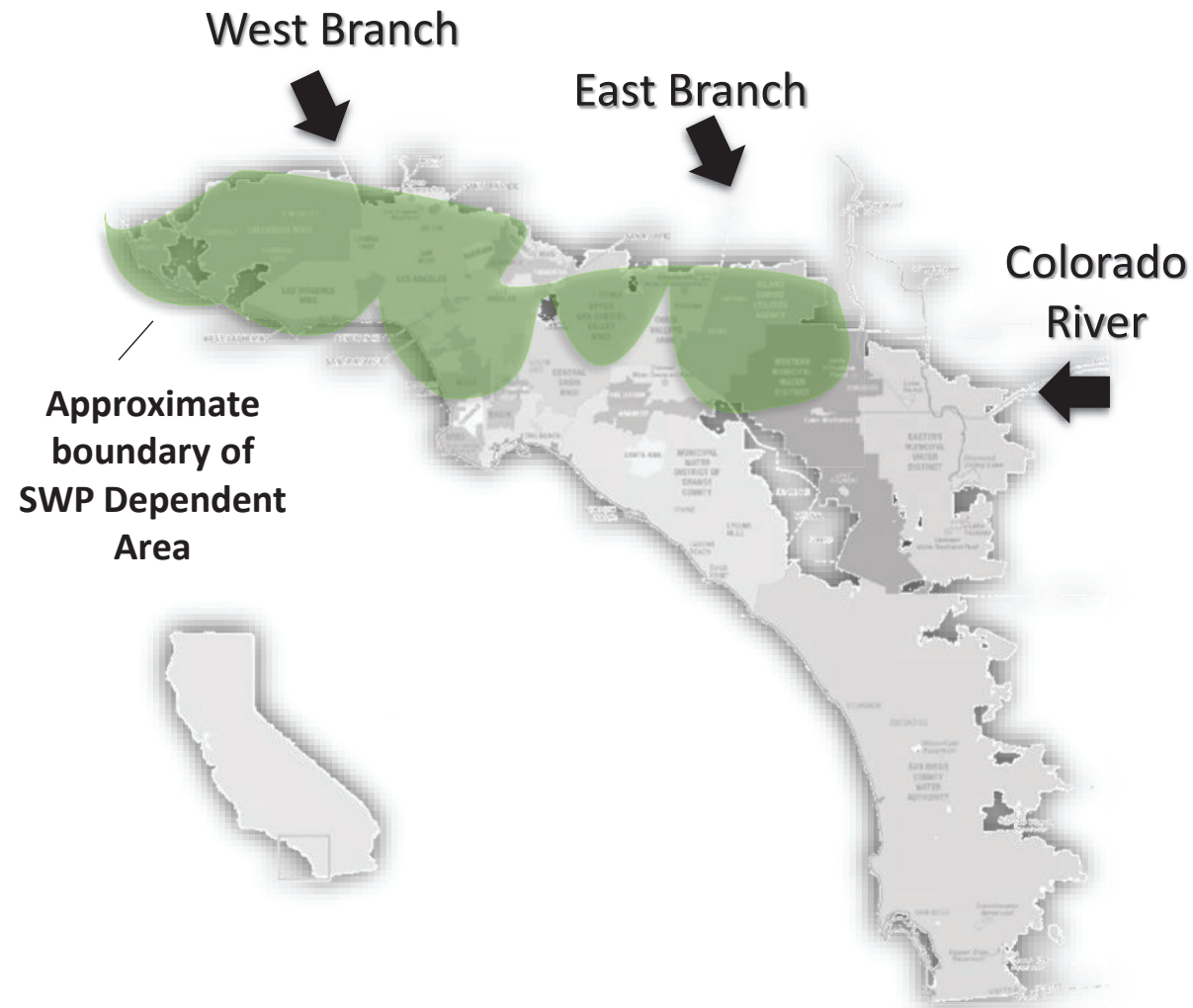


Addressing Drought

- Jan 2022, statewide emergency regulations to prevent wasteful water use went into effect
- Mar 2022, Governor Newsom issued an Executive Order to support even more water conservation at the local level
- **Apr 26, 2022, Metropolitan implements emergency outdoor watering restrictions affecting dozens of communities in Los Angeles, Ventura and San Bernardino counties and about 6 million Southern Californians**



Challenge for Areas Served from Northern California



- Water-use restrictions affect ~6 million Southern Californians in Los Angeles, Ventura and San Bernardino counties
- Mostly limiting outdoor watering to one or two days a week or volume use limits
- Pending requirement for *all* urban areas to reduce use by 20% or more
- Stored water is available, but declining
- Colorado River water is available, but system is also in stress

Flexible Supply System Benefits Region



Standard Operation

(During most years)

Flexible Supply System Benefits Region



**When State Water Project
(Northern California)
Supplies are
abundant**

Flexible Supply System Benefits Region



**When State Water Project
(Northern California)
Supplies are
scarce**

Lake Mead has dropped 25 feet since January

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Items Appearing as Mead Lake Level Drops



SNWA's Original Intake



**Human Remains
Found in Barrel**



Ghost Ship Emerges

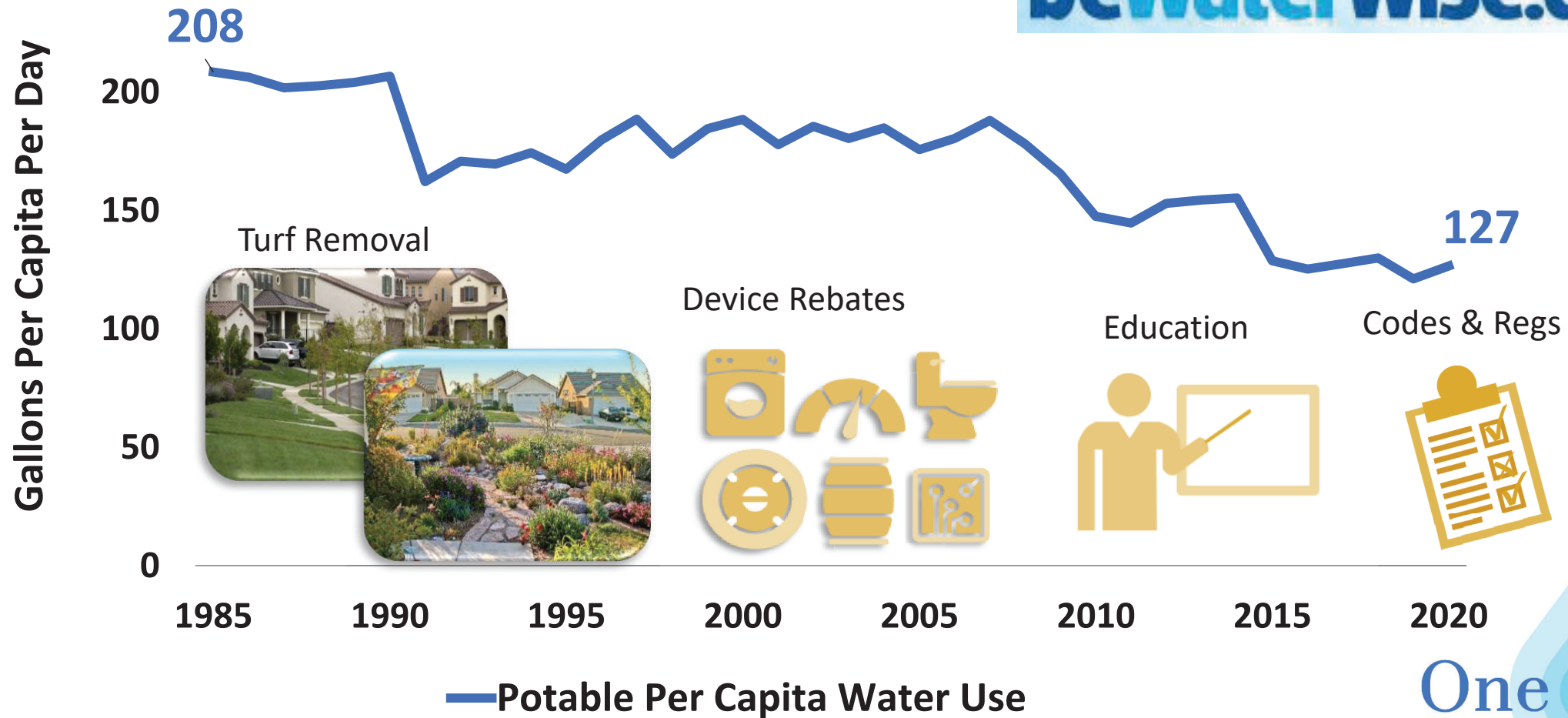
June 14, 2022: Commissioner Touton Calls for 2 – 4 MAF of Water Reductions in 2023



SoCal's Water Use Declined by Nearly 40%

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bewaterwise.com[®]



Strong Messaging for the Region



Drought **Emergency** //

Cut back outdoor watering to one day a week.

// For more information, visit www.calleguas.com



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA



bewaterwise.com[®]



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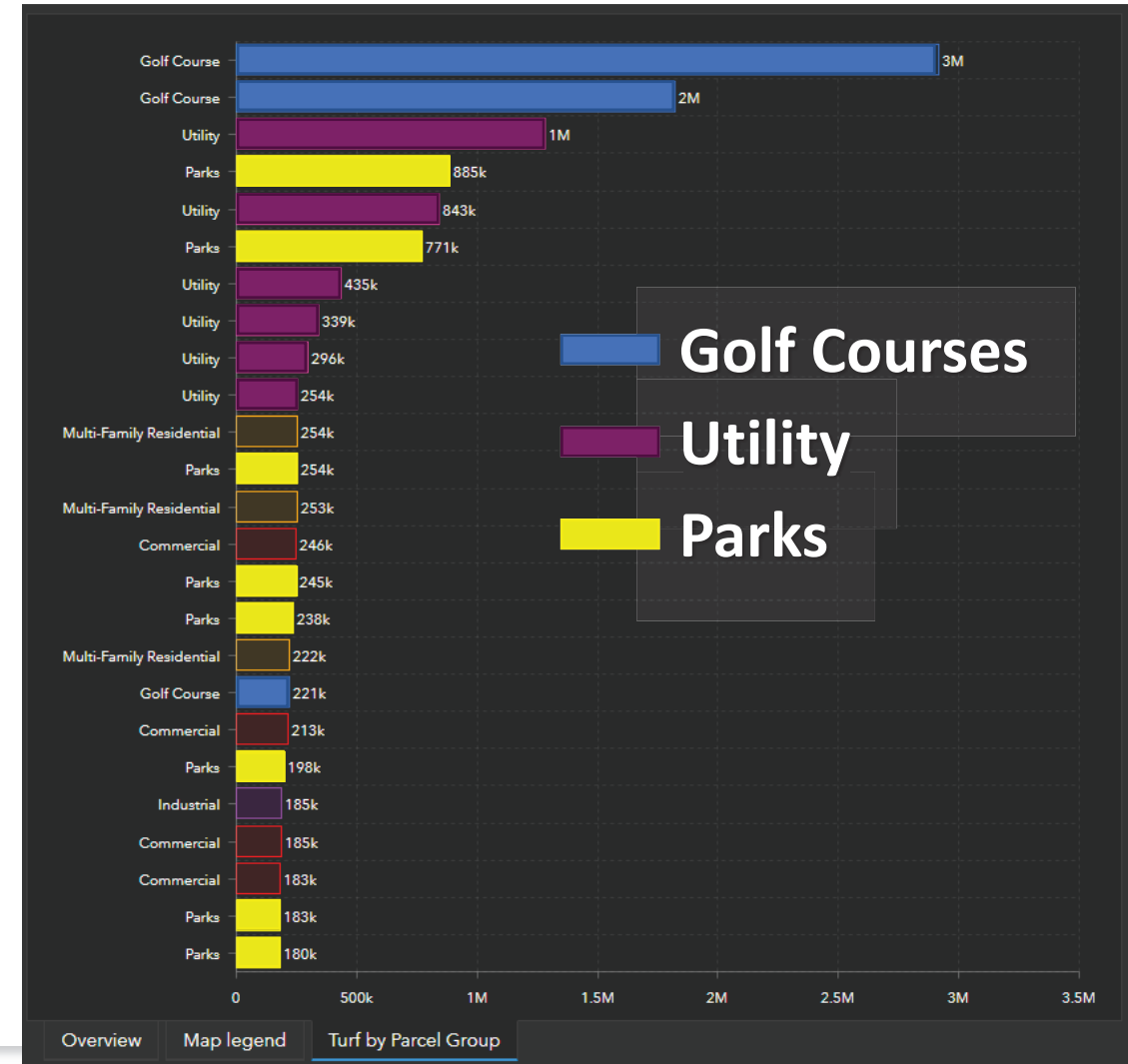
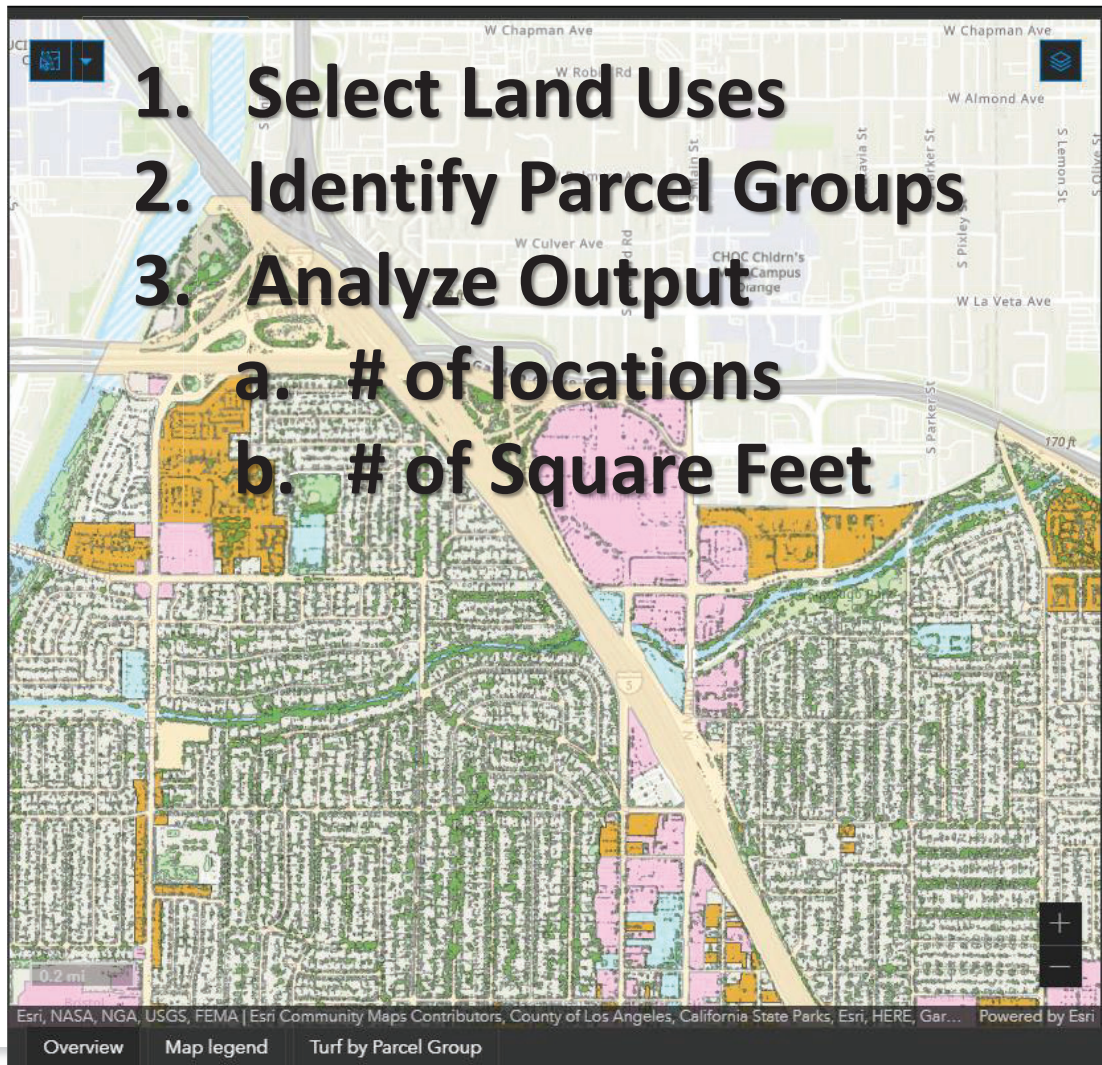
THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA



bewaterwise.com[®]

The Question of “Non-Functional Turf”

Pilot Study on a Turf Identification Tool for the City of Santa Ana



Pure Water Southern California



A LOOK INSIDE THE PLANT



A partnership between the Metropolitan Water District of Southern California and the Sanitation Districts of Los Angeles County

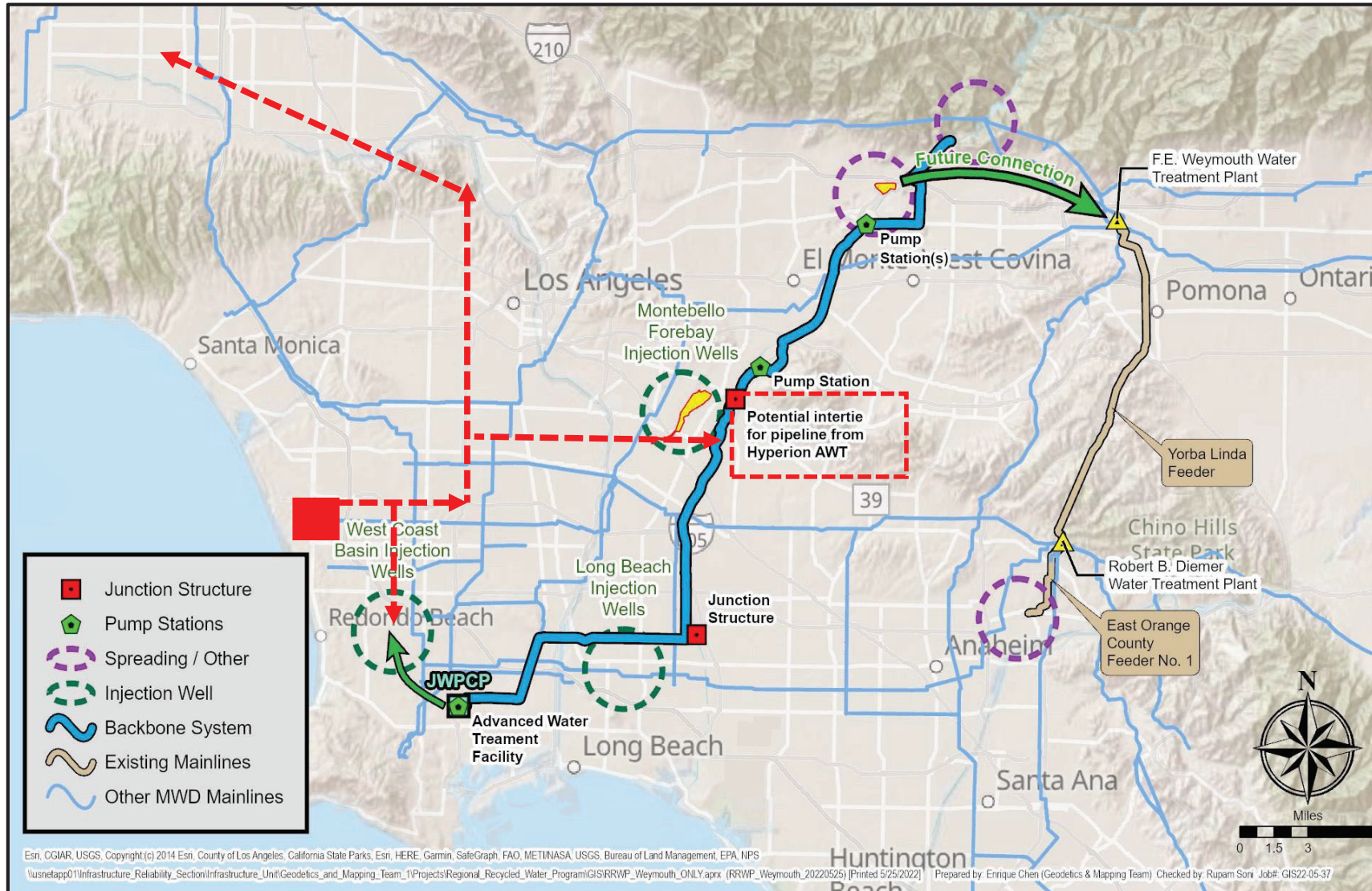
500,000-gallon-per-day Demonstration Facility

Full-scale facility to produce up to 150 million gallons of purified water daily (168,000 acre-feet each year)
→ enough for more than 500,000 homes

3-Step Purification Process Includes

- Membrane Bioreactors
- Reverse Osmosis
- Ultraviolet Light/Advanced Oxidation process

Pure Water Southern California Overview



Phase	Completion
Environmental Planning	2021 – 2024
Early Start Projects	2022 – 2025
Design & Construction	2024 – 2031
Testing and Operation	2031 - 2032

Available Rebates and Incentives



- Device Rebates – SocalWaterSmart.com
- Turf Replacement
- Water Savings Incentive Program – Custom, pay-for-Performance Incentives
- On-Site Recycled Water Retrofit Program
- Free Large Landscape Surveys - BeWaterWise.com
- Landscape Training for Professionals

Commercial Device Rebates



\$200



\$625+



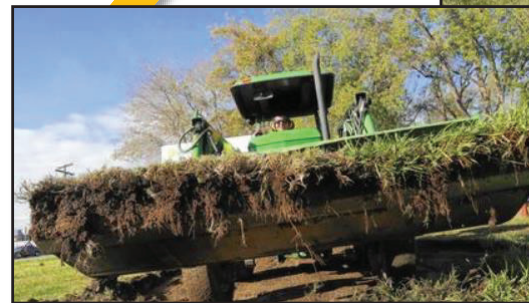
\$485+

Rebates available for:

- Turf replacement
- High-efficiency plumbing fixtures
- HVAC equipment
- Commercial kitchen & food equipment
- Medical & dental equipment

Turf Replacement Program

- Multi-pronged approach to maximize water utilization and conservation
- Minimum \$2 per square foot of turf removed
 - Commercial: 50,000 square foot rebate maximum (per year)
- Incorporates watershed components to capture runoff
- Additional requirements on socalwatersmart.com



Water Savings Incentive Program (WSIP)

- “Pay for performance program”
- Incentives for non-residential, customized projects:
 - Retrofit existing equipment
 - Improve processes
 - Improve agriculture & landscape irrigation systems
 - Contract for water management services
- Apply online at socalwatersmart.com



Example 1: Large Landscape Project

Project	Replacement & upgrade of entire irrigation system, including “smart” irrigation controllers, drip and high-efficiency sprays, flow sensors, rain sensors, master valves, & lateral lines ~16.6 Acres irrigated area. Project completed ~ Dec 2014
Calculated water savings	355M gallons over 10 years
MWD incentive	\$141,069
Eligible Project Costs	\$780,000



Example 2: Commercial Project

Project	Wholesale plant nursery captures its own irrigation runoff, treats it on-site through natural processes, stores water on-site and re-uses for irrigation. Project completed ~ Oct 2014
Calculated water savings	1,180M gallons over 10 years
MWD incentive	\$357,659 (+ \$100,000 WMWD)
Eligible Project Costs	\$715,317

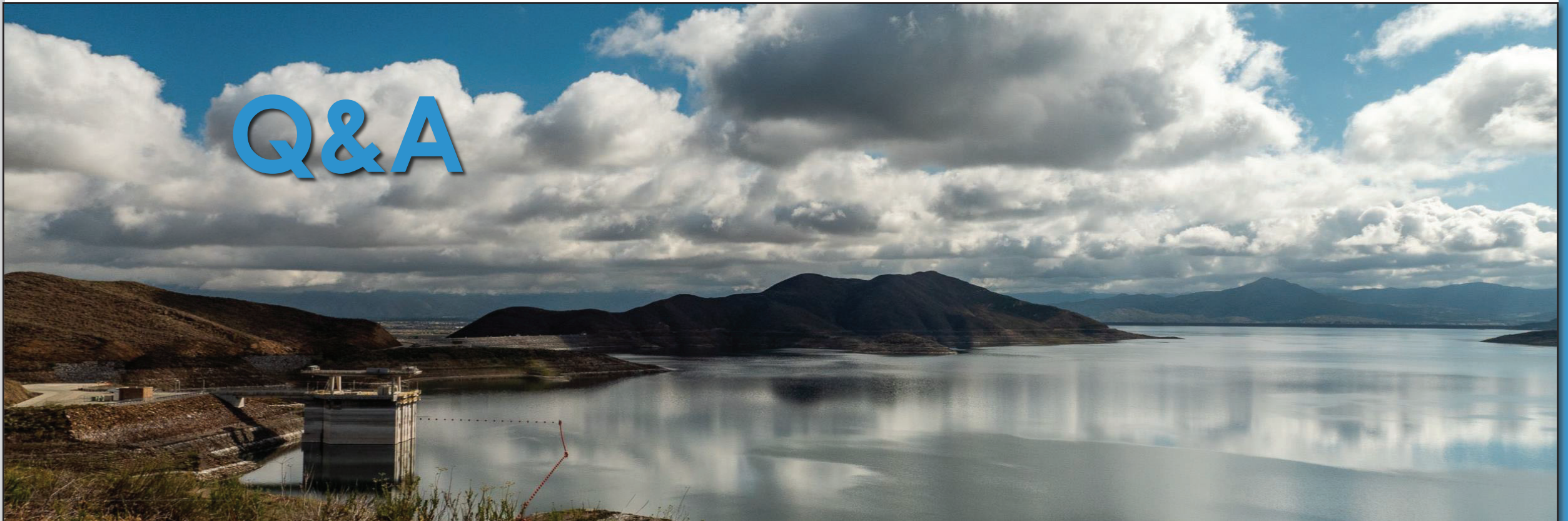


Additional Commercial Incentives

- On-Site Retrofit Program
 - Convert potable irrigation or industrial water systems to recycled
 - \$195 per acre-foot for five years of estimated water use (up to actual costs)
- Free Landscape Surveys
 - Minimum 1 acre irrigated area
 - Recommendations Allow for custom projects
- Landscape Training for Professionals
 - FREE PDF Handbook available @ bewaterwise.com
 - FREE CLCA and QWEL dual Certification and MWEL @ www.clca.org



Q&A



Deven Upadhyay
Assistant General Manager
Metropolitan Water District