



# An Inseparable Partnership- Water and Agriculture

June 14, 2022

Randy Record

- 
- Farmer: grew up on a dairy, have grown forage, vegetable, citrus and wine grapes
  - Eastern Municipal Water District board member since 2001
  - Metropolitan Water District of Southern California board member since 2003 including four years as Chairman
  - Association of California Water Agencies board president for two years
  - California Farm Water Coalition board member
  - 1976 graduate of Cal Poly SLO



# Agriculture in California



# Central Valley Project

Extending 400 miles through central California, the Central Valley Project (CVP) is a complex, multi-purpose network of dams, reservoirs, canals, hydroelectric powerplants and other facilities. The CVP reduces flood risk for the Central Valley, and supplies valley domestic and industrial water. It also supplies water to major urban centers in the Greater Sacramento and San Francisco Bay areas, as well as producing electrical power and offering various recreational opportunities. In addition, the project provides water to restore and protect fish and wildlife, and to enhance water quality.

Construction of major CVP facilities began in 1938 with breaking of ground for Shasta Dam on the Sacramento River near Redding in Northern California. Over the next five decades, the CVP was expanded into a system of 20 dams and reservoirs that together can hold nearly 12 million acre-feet.

The CVP has long-term agreements to supply water to more than 250 contractors in 29 of California's 58 counties. Deliveries by the CVP include providing an annual average of 5 million acre-feet of water for farms; 600,000 acre-feet of water for municipal and industrial uses (enough water to supply about 2.5 million people for a year); and water for wildlife refuges and maintaining water quality in the Sacramento-San Joaquin Delta.

## Major CVP Facilities

### Dam and Reservoir

### Storage Capacity (acre-feet)

Shasta Dam and Reservoir

4,552,000

Trinity Dam and Reservoir

2,448,000

Folsom Dam and Reservoir

977,000

New Melones Dam and Reservoir

2,420,000

Friant Dam and Reservoir

520,000

San Luis Dam and Reservoir

966,000 (Federal share)

# State Water Project

The California State Water Project (SWP) is a multi-purpose water storage and delivery system that extends more than 705 miles -- two-thirds the length of California. A collection of canals, pipelines, reservoirs, and hydroelectric power facilities delivers clean water to 27 million Californians, 750,000 acres of farmland, and businesses throughout our state.

Planned, built, operated and maintained by DWR, the SWP is the nation's largest state-owned water and power generator and user-financed water system. The project is considered an engineering marvel that has helped fuel California's population boom and economic prosperity since its initial construction.

For the last 20 years, the California State Water Project's average water is 34 percent for agricultural and 66 percent for residential, municipal, and industrial.

The State Water Project also plays an important role in efforts to combat climate change. Not only does it help California manage its water supply during extremes such as flooding and drought, it is also a major source of hydroelectric power deliveries for the State's power grid.

## **Benefits of the SWP:**

The primary purpose of the SWP is water supply delivery and flood control, but it provides many additional benefits, including:

- Power generation
- Recreation activities
- Environmental stewardship

# SWP OVERVIEW



For the last 20 years, the California State Water Project's average water is 34 percent for agricultural and 66 percent for residential, municipal, and industrial.



# Facts On California's Agricultural Production

- California accounts for two-thirds of U.S. fruit production and one-third of U.S. vegetable production
- Combined, more than 60% of the U.S.-produced fruits, nuts, and vegetables come from The Golden State
- California's total agricultural value is ~ \$50 billion per year
- In 2015, farms generated 38% more state product compared to 1980 while reducing water use by 14%
- California's Central Valley produces 8% of the nation's agricultural product on less than 1% of the nation's agricultural land
- Water users have invested \$100 million a year for more than a decade on new Delta science
- Use of recycled water has tripled in agriculture since the late 1980s to over 700,000 AF annually.



**UNTIL WE PRIORITIZE OUR DOMESTIC FOOD SUPPLY, THIS WILL CONTINUE TO GET WORSE.**

IMPACTS OF A DIMINISHED CALIFORNIA WATER SUPPLY



CROPS AFFECTED\*

Tomatoes  
Melons  
Sweet Corn  
Lettuce  
Broccoli

Strawberries  
Potatoes  
Grapes  
Onions  
Rice

Nuts  
Citrus  
Dairy  
Peaches  
Garlic

\*partial list



[www.farmwater.org](http://www.farmwater.org)

# Price Points Are Critical

- California law (Prop. 218) requires that there be a nexus between the price of water and the cost of delivery.
- Farm water is often delivered close to its source via gravity through old infrastructure that was built when costs were low.
- Urban water is often delivered through infrastructure that includes local storage, water treatment to meet drinking water standards and is available on-demand at the customer level 24-hours a day.
- Sacramento Valley farm water can be delivered for \$25 to \$50 per acre-foot.
- Southern California urban water can cost \$1,500 per acre-foot.
- Drought-year spot market prices can exceed \$2,000 per acre-foot.

## California's WATER USAGE NUMBERS

50%

Environment  
wild and scenic,  
bay-delta outflow  
and managed wetlands

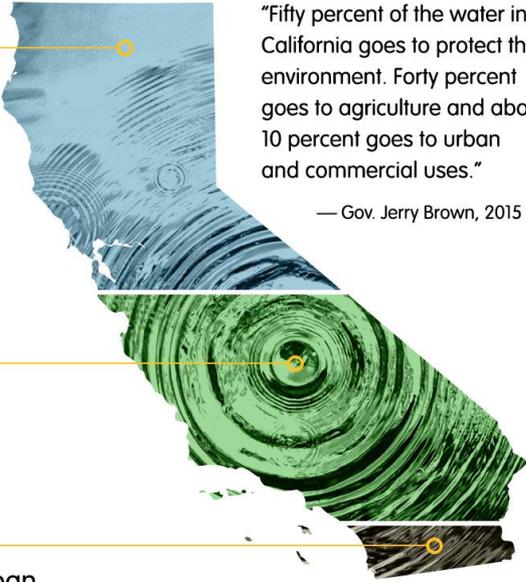
40%

Agriculture  
food and fiber production

10%

Urban and suburban

Source: Department of Water Resources



“Fifty percent of the water in California goes to protect the environment. Forty percent goes to agriculture and about 10 percent goes to urban and commercial uses.”

— Gov. Jerry Brown, 2015

# 2022 Surface Water Deliveries

Region	Acres	Allocation
North of Delta – CVP Water Service Contractors	450,000	0%
North of Delta – CVP Settlement Contractors	450,000	18%
South of Delta – CVP Water Service Contractors	1,200,000	0%
Exchange Contractors	240,000	50%
Feather River Diversion Agreement	150,000	50%
State Water Project	750,000	5%
Friant River	1,000,000	15%
San Joaquin River Tributaries (Modesto, Turlock, Merced)	260,000	50%

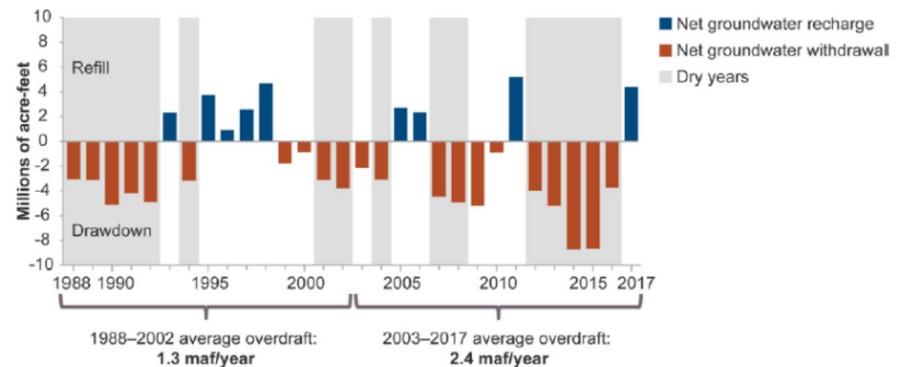
**Almost half of California’s irrigated farmland is getting 50% or less of a normal water supply.  
One-third of California’s irrigated farmland is getting 15% or less, some as low as zero.**

# Stabilizing Groundwater Supplies

- California must find a way to deal with overdraft to eliminate long-term imbalances and promote sustainability
- Groundwater sustainability must be addressed in two forms: Quality and quantity
- Long-term impacts of unsustainable groundwater basins include substantial costs to water and other infrastructure (roads, bridges) because of subsidence.

## The valley relies on groundwater overdraft to deal with its long-term water imbalance

- 30-year valley-wide deficit (1988-2017): 1.8 maf/year



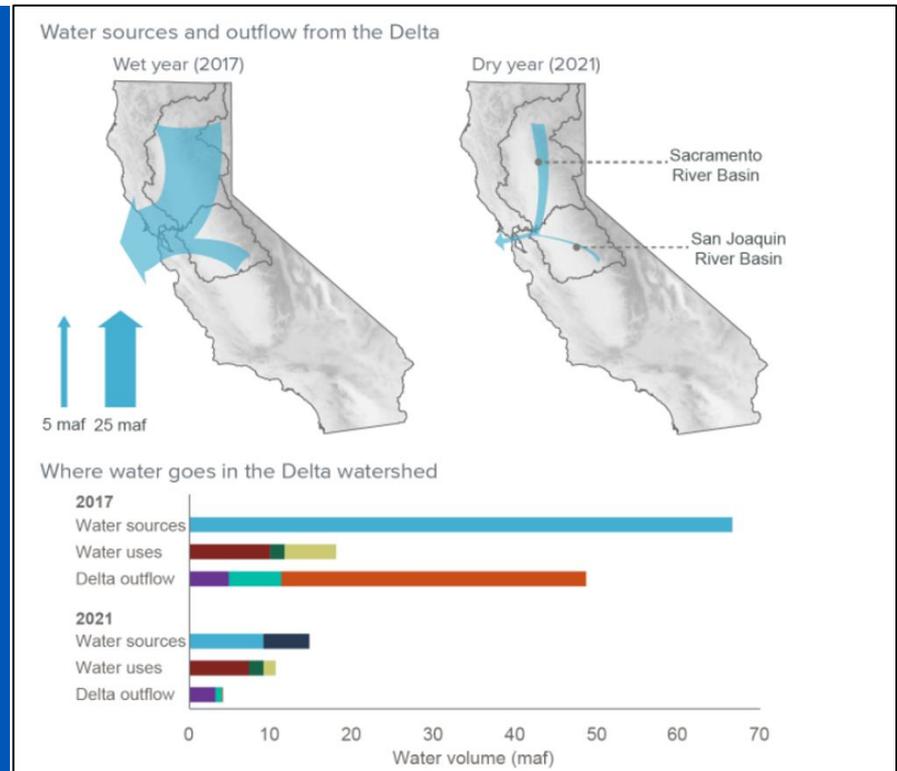
PPIC WATER POLICY CENTER

# Successfully Managing Delta Water Supplies

There is surplus water in wet years that we can store for use in dry years.

**“Increasing the amount of water stored during wet periods — whether by taking more water out upstream of the Delta, or making the best use of export facilities — has to be done with care for the environment and other water users. But it is possible to do a better job of storing water during wet years — both above and below ground — without doing harm.”**

— Public Policy Institute of California  
Policy Brief, May 2022



Scan QR code with your phone for a copy of the PPIC Policy Brief

# Voluntary Agreements and the Path Forward

## Initial Strategic Plan, Monitoring Plans approved by State Water Board

- Agreed upon implementation and efficacy metrics

## Governance group includes all VA parties, plus some NGOs

- Decides habitat projects and advises on flow operations

## Annual reporting to the State Water Board

- Documents actions taken and what was learned

## How Much Water Will Be Added to The Delta?

	Critical	Dry	B. Normal	A. Normal	Wet
San Joaquin Basin	48	145	179	112	0
Friant	0	50	50	50	0
Sacramento, Feather, Yuba, American, Putah	39	268	236	236	0
Water Purchase Program- fixed	3	63.5	84.5	99.5	27
Water Purchase Program- spot market	0	45	45	45	0
State Purchases	65	108	9	52	123
Exporters	0	125	125	175	0
Mokelumne + SJR gap	0	21	22	55	0
<b>TOTAL THOUSAND ACRE-FEET (above 2019 BiOp)</b>	<b>155</b>	<b>825.5</b>	<b>750.5</b>	<b>824.5</b>	<b>150</b>

## \$2.9 Billion Program

- State commitments through bonds and General Funds: **\$1.4B (49%)**
- Federal share: **\$740M (25%)**
- Other: **\$168M (6%)**
- PWAs: **\$588M (20%)**
- SWP total (estimate based on deliveries):
  - \$10/AF, Years 1-8: \$200M
  - \$10/AF, early implementation: \$50M
  - Value of foregone exports, Years 1-8: \$147M

**TOTAL: \$2.9B**



# EMWD Overview and Partnership with Agricultural Customers



ESTABLISHED IN  
**1950**



SERVES:



WATER / WASTEWATER / RECYCLED



**558**  
SQUARE MILE  
SERVICE AREA



WHOLESALE



RETAIL



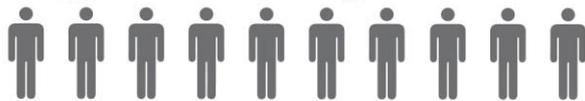
CURRENTLY  
BUILT OUT

APPROXIMATELY

**38%**

POPULATION NEARLY:

**1,000,000**



**26** member agencies  
of The Metropolitan  
Water District of  
Southern California



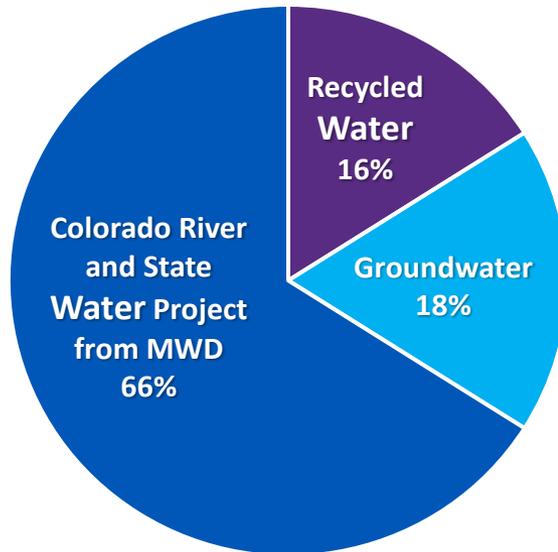

ONE OF THE



# Water Supply Portfolio

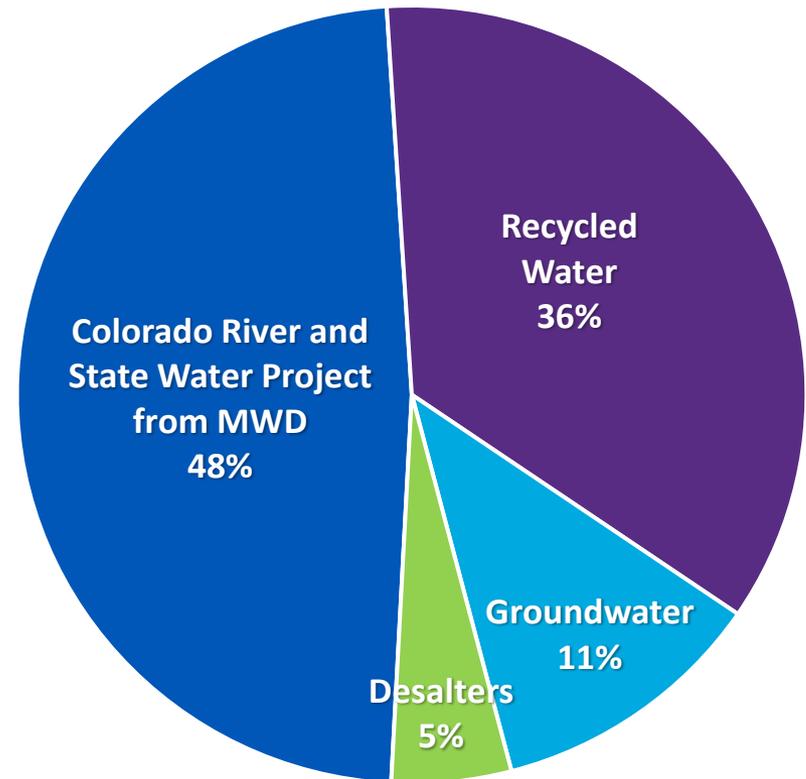
1990

Population served: 358,000



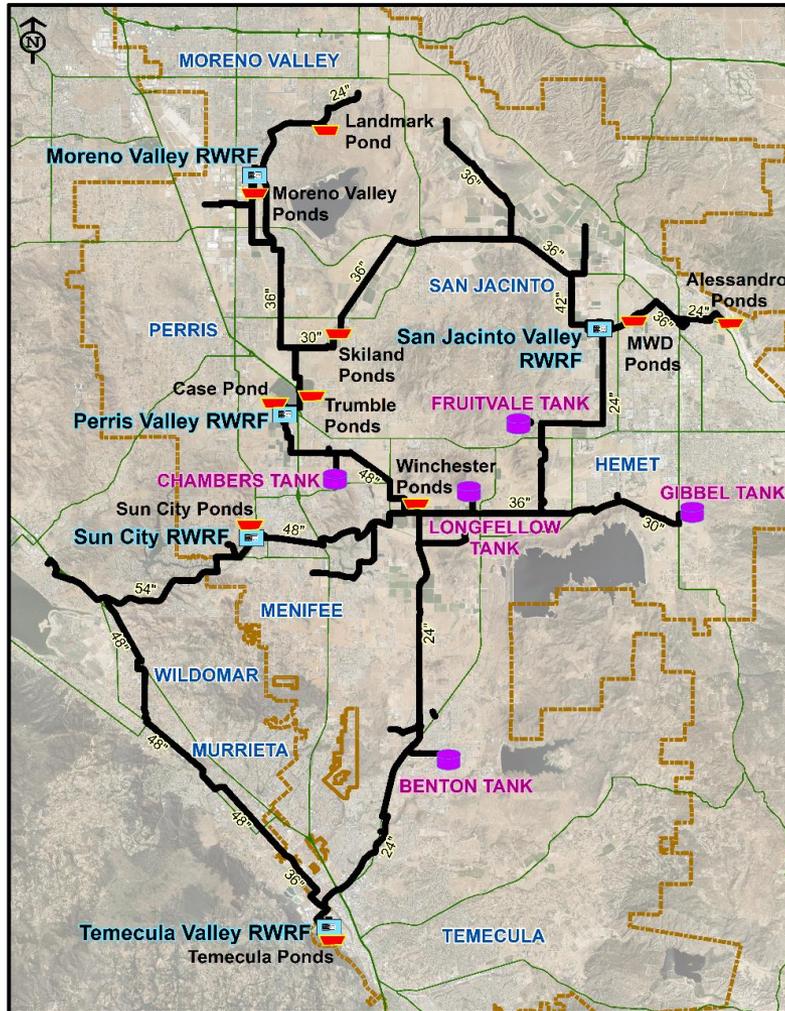
2021\*

Population served: 870,500



\*Total Water Supply: 147,734 AF per EMWD Annual Comprehensive Financial Report, FYE 2021

# EMWD's Recycled Water Program

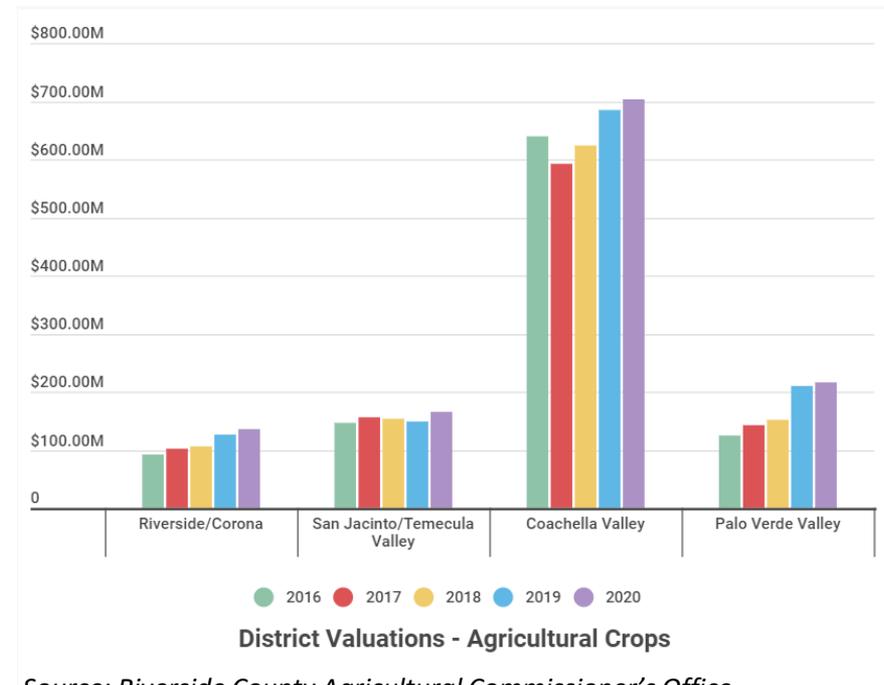


- \$200 million in capital investments
- 252 miles of recycled water pipeline
- Nearly 7,700 AF of seasonal storage
- Four pressure zones consisting of:
  - 19.5 MG of elevated storage
  - 24 active pump facilities



# Ag Overview

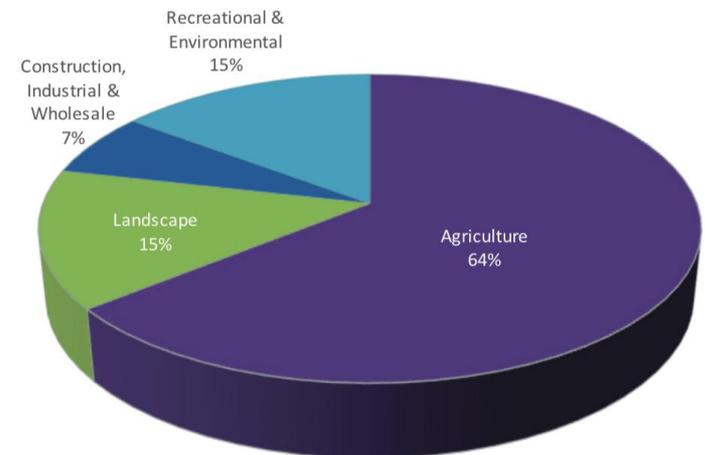
- Riverside County, California, is still a major agricultural hub with production over \$1.2 billion annually, according to the Riverside County Agricultural Commissioner
  - Coachella Valley is the second-largest agricultural producer in the state, with an estimated \$700M in production in 2020
- EMWD's general service area of San Jacinto/Temecula Valley has an annual production of approximately \$165 million



# Recycled Water Overview

- Approximately two-thirds of EMWD's recycled water supply is used to irrigate fields that provide fruits and vegetables for grocery stores, restaurants, farmers markets and households throughout the western United States
  - Potatoes, melons, bok choy and other Asian vegetables; berries and fodder crops
- Price point is kept low enough to discourage groundwater pumping
  - Two large dairies have signed in-lieu agreements to receive a discounted agricultural recycled water rate in exchange for restrictions on pumping from a high-quality groundwater basin
  - Agreements in place since 2008

**Recycled Water Sales by Customer Type Total Demand: More Than 30,000 acre feet**



**Using the right water for the right use**

# Other Ag Partnership Efforts

- Ag irrigation efficiency study with Cal Poly San Luis Obispo
  - Funded by the Bureau of Reclamation
- Established a regional coalition to assist in compliance with the Conditional Waiver for Agricultural Discharge, a program intended to reduce agricultural runoff in the watershed
  - Santa Ana Regional Water Quality Control Board
- Implementing policies to promote pollinators
  - Safely remove/relocate bees instead of exterminating
  - Promoting use of native plants in landscaping that support pollinators



# Highlighting Agriculture's Commitments

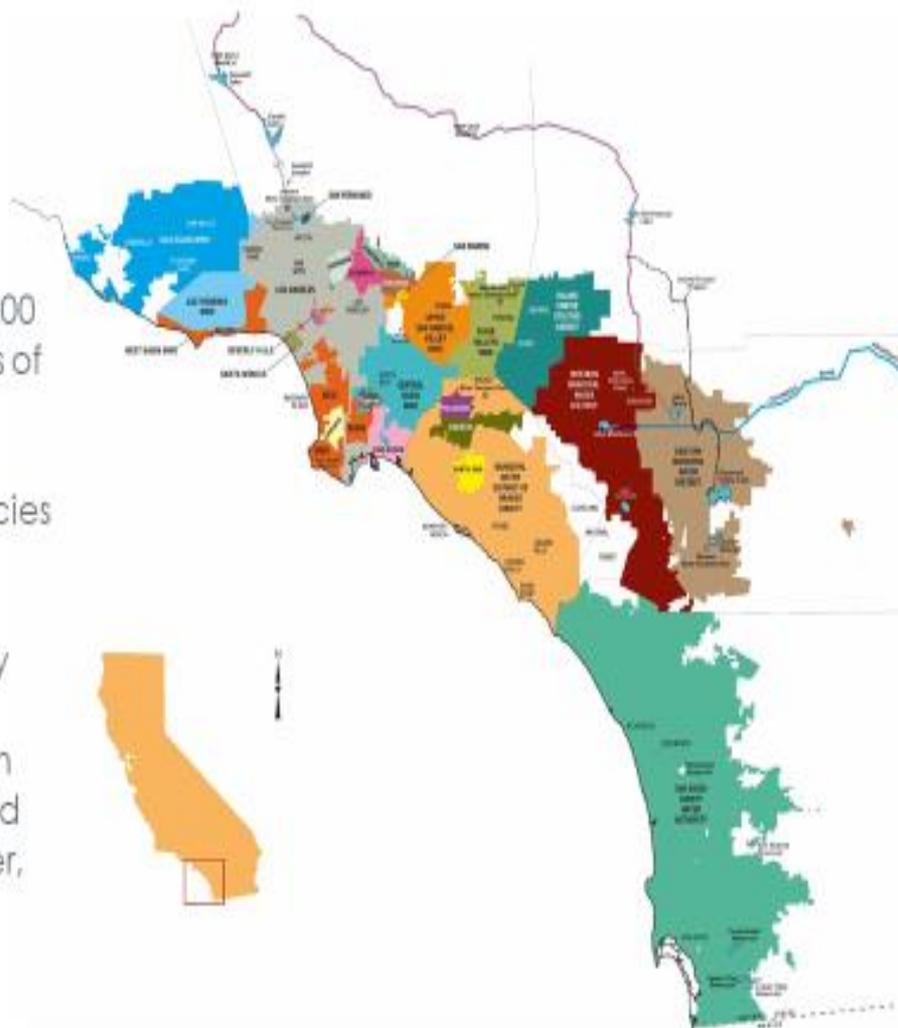


- EMWD developed a program to promote recycled water awareness at agricultural sites
- Banners promoting the efficient use of recycled water were installed during the 2016 drought and new banners were installed in 2022
- Idea for banners came as a result of discussions with area farmers who felt the public was not aware of their commitment to recycled water and efficient practices

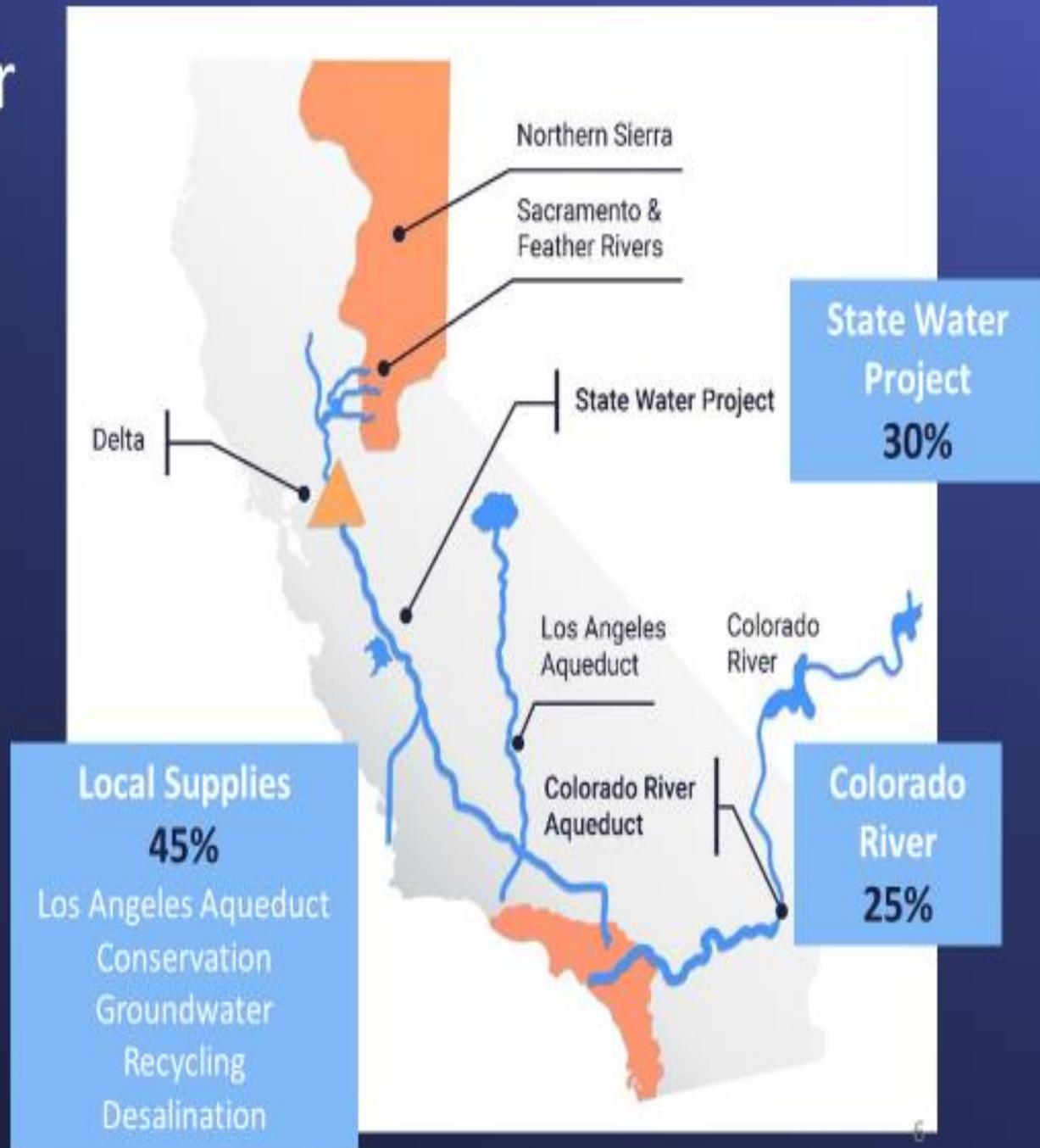


# The Metropolitan Water District of Southern California

- Nation's largest wholesale water provider
- Service area: 19 million people/5,200 square miles/parts of six counties
- 26 member agencies
- Supports \$1 trillion regional economy
- Imports water from Northern Sierra and the Colorado River, invests in local projects



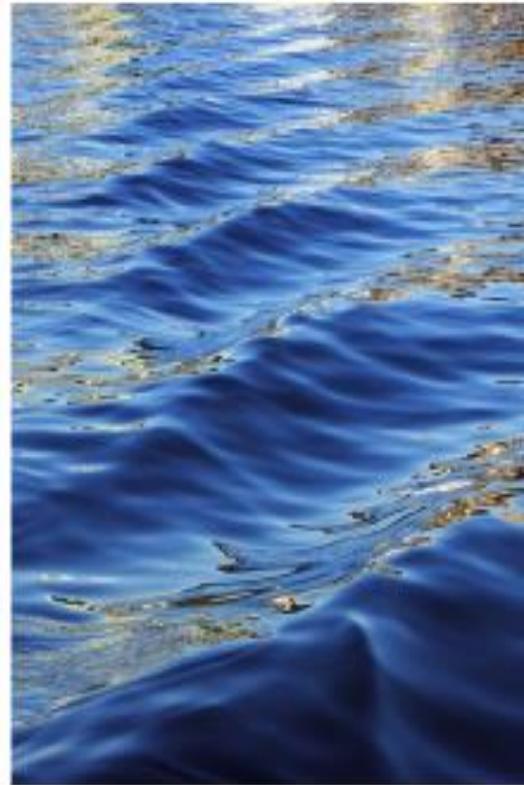
# Securing Water for Southern California





# Urban-Agriculture Partnerships

Partnerships along the Colorado River



# Collaborative Programs on the Colorado River

1988



## IID-MWD Water Conservation Program

Coordinated system improvements and conservation projects to increase water use efficiency, allowing farmers to grow the same crops with less water.

2005



## PVID Fallowing Program

A 35 year land management and crop rotation program that transfers up to 125,000 AF of Colorado River water annually to Metropolitan through fallowing of up to 25,947 acres annually in the Palo Verde Valley.

2016



## Bard Seasonal Fallowing Program

Participating farmers in Bard Unit decrease their water consumption through land fallowing of up to 3,000 acres annually during the months of April through July in each year of the Program.

2022



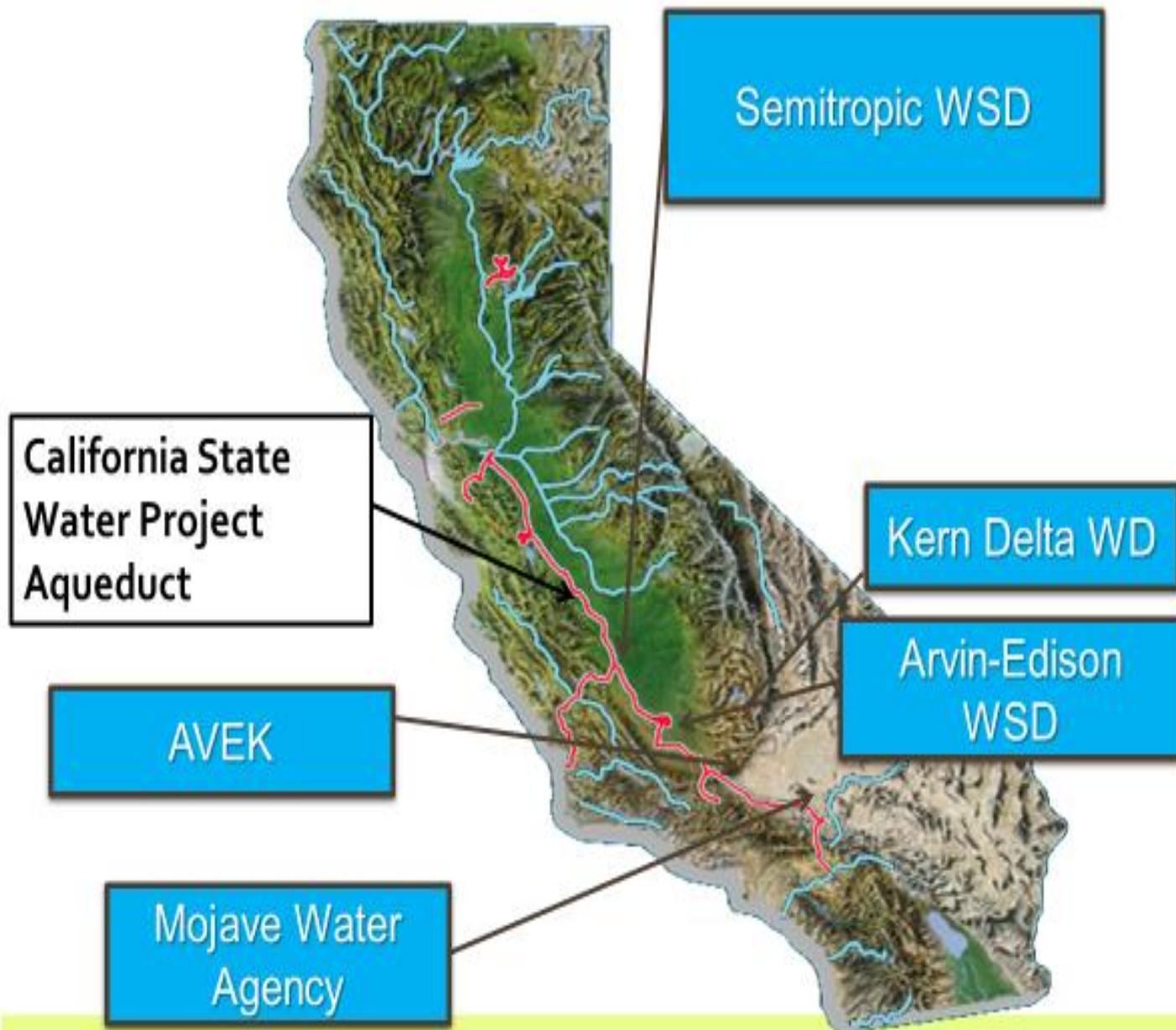
## Quechan Seasonal Fallowing Program

Participating farmers on tribal land in the Fort Yuma Indian Reservation decrease their water consumption through land fallowing of up to 1,600 acres annually during the months of April through July in each year of the Program.

## Under Development – Do More With Less

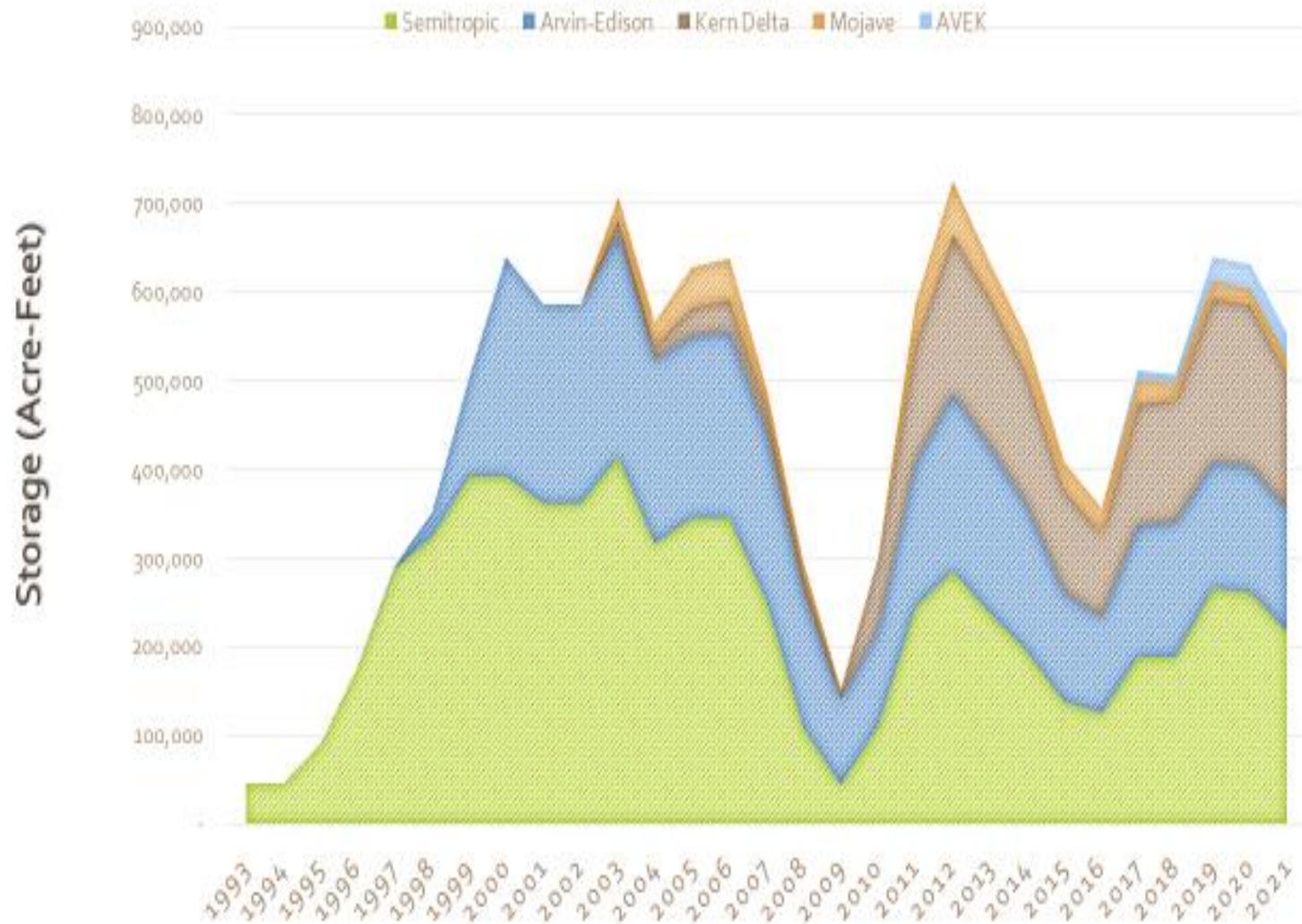
- Deficit Irrigation Alfalfa Program
  - Provide incentives for farmers to deficit irrigate alfalfa crops during the late summer months
  - Reduces water consumption by eliminating summer irrigation events, producing water savings while minimizing yield loss
- Seasonal Crop Rotation Pilot Program with Palo Verde Irrigation District
  - Modeled after the Bard and Quechan Seasonal Fallowing Programs
  - Provide incentives for farmers to fallow during the summer months of 2023 and 2024
  - Farmers would enroll in either a 4-month rotation season or a longer 6-month rotation season each year
  - Potential for the program to expand
- Conservation Program with Coachella Valley Water District
  - Voluntary, temporary, and compensated program
  - MWD would reimburse CVWD

# SWP Groundwater Storage Programs



# SWP Groundwater Storage Programs

(End of Year)



# Conservation Projects



## Reservoirs

- 5 additional, doubled storage



## Canal Lining & Lateral Interceptors

- 270 miles of laterals
- 34 lateral interceptors
- Installation of 14 non-leak gates



## Irrigation Management & 12-Hour Delivery

- 55,000 deliveries per year
- Delivery measurement and Pumpback Systems
- Installation of drip irrigation systems



## System Automation

- Main canal automation and Water Control Center

# SUSTAINABILITY

## Regenerative Approaches

- Limit land subsidence & carbon release
  - Regenerative agriculture
  - Cultivated wetlands
- Helps reduce Bay-Delta carbon emissions (CO<sup>2</sup>)
  - 2 million metric tons/yr.
  - 500,000 vehicle equivalent annually



# SUSTAINABILITY

## Carbon Revenue

- Current projects
  - Pilot managed wetland - Bouldin
  - Carbon credit revenue
- Future opportunities
  - Wetlands expansion – salmon migration tidal marsh concepts
  - Regenerative ag (floating peat - biofuels)
  - NGO collaboration (Nature-Based Solutions)
  - Grant opportunities in proposed State Budget

Wetland Restoration



## Underground Carbon Capture & Storage

### Overview

- 40 yrs. of worldwide operations
- 5 projects in development in CA
- Delta geology well suited for safe CO<sub>2</sub> storage
- CO<sub>2</sub> injected 2 miles underground
- Point sources – power stations, ethanol/cement plants, refineries

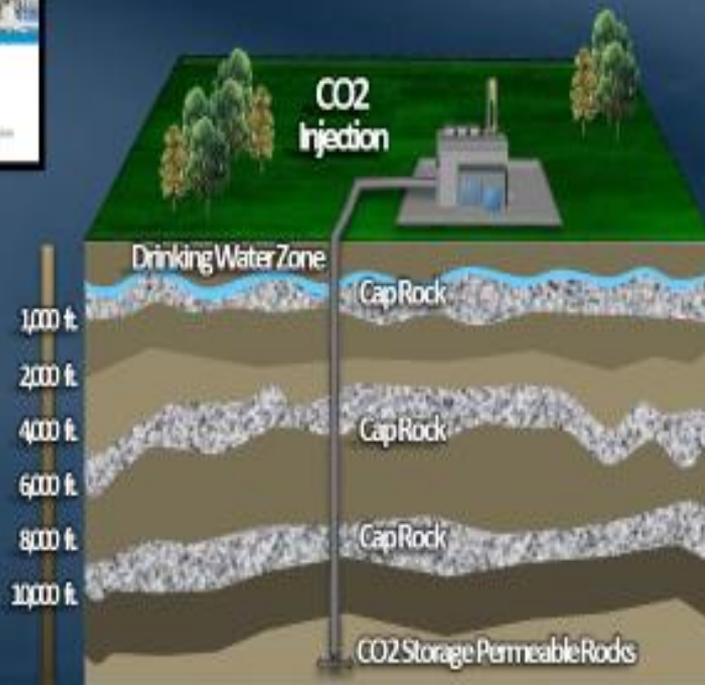
### Purpose

- Assist in meeting State's carbon neutrality goal
- Secure funds to further habitat restoration, subsidence reversal

An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions

SUMMARY FOR POLICYMAKERS

*“Carbon Capture and Storage is a critical decarbonization pathway for helping California meet its 2045 carbon neutrality goal”*  
– Stanford University Report 2020



A joint study by

Stanford University

*A community program to invest in new generations of small farmers through on-farm experience*



## Bringing Back Small Farms

- Objective
  - Land acreage “carve-out” for smaller farms
  - Local farmer apprenticeship programs
  - Community education
- Current Actions
  - Collaborating with universities, community colleges, environmental justice groups, others
- Future Strategy/Concepts
  - Farm-to-school programs



# Contact Information

Randy Record  
EMWD Vice President, and  
Board of Director, The Metropolitan Water District of Southern California