



# EMWD's Water Banking Program

Brian Powell, P.E.

June 21, 2018

# Agenda

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- About EMWD
- Why Bank Water?
- EMWD's Proposed Water Banking Program
- Planning for a Future Supply Alternative
- Groundwater Reliability Plus





# About Eastern Municipal Water District



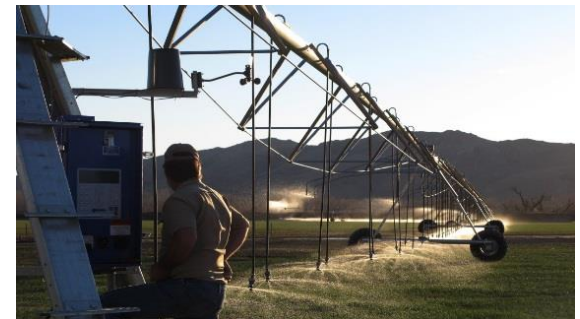
# EMWD's Service Area

- Established in 1950
- 555 square miles
- Population: 816,000
- Wholesale and Retail
- Moreno Valley to Temecula
- One of 26 member agencies of The Metropolitan Water District of Southern California (MWD)
- EMWD Representative  
– Randy Record, MWD Chairman
- Five year capital improvement program of \$399 million for FYE 2017-2021



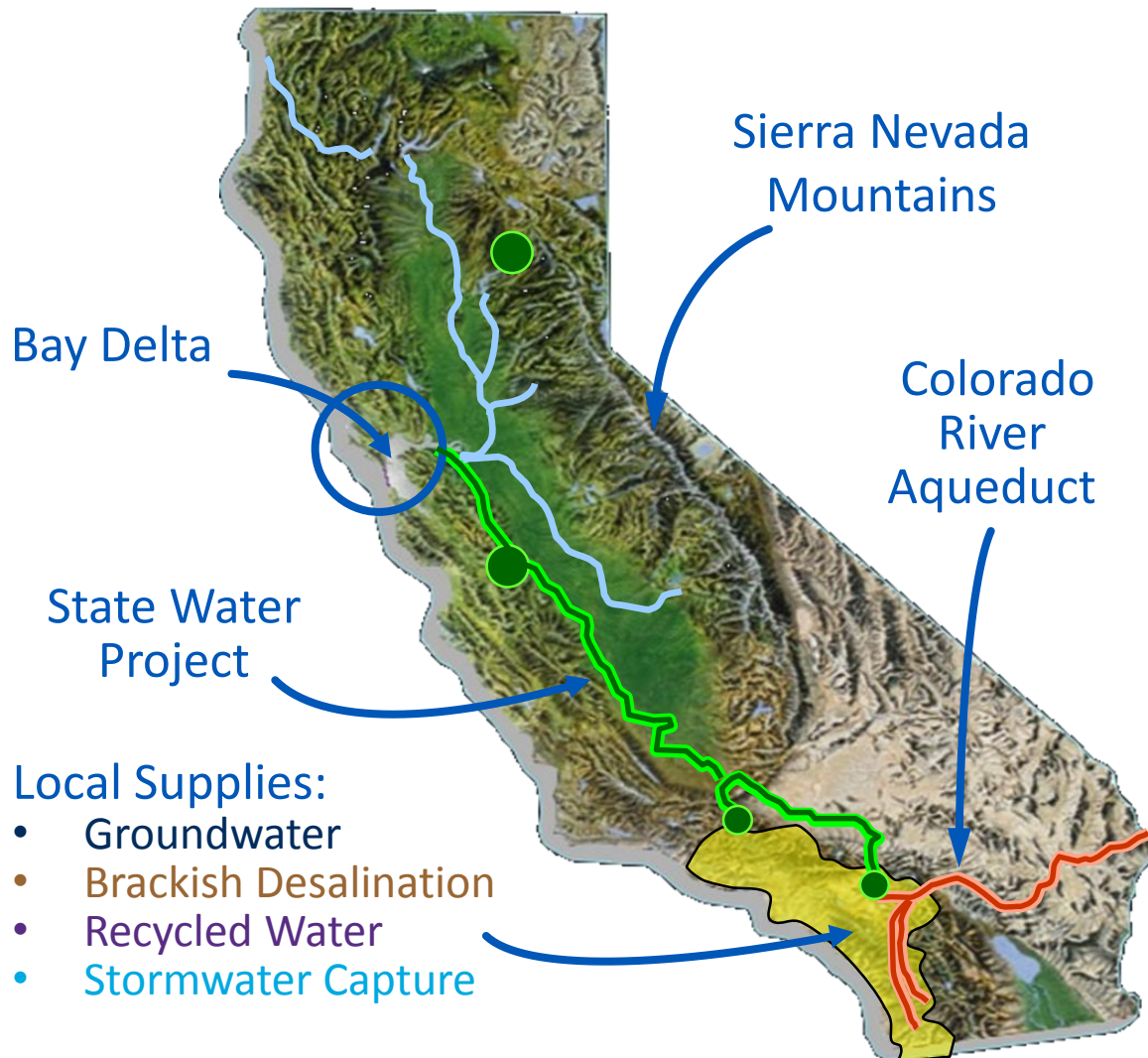
# EMWD Services

- **Potable Water:** Approx. 146,000 accounts
  - Imported water from the State Water Project and Colorado River
    - Directed treated deliveries from MWD
    - Two Ultra-filtration plants
  - Groundwater wells (adjudicated - managed basin)
  - Menifee and Perris brackish desalters
- **Wastewater:** Approx. 239,000 accounts
  - Four regional water reclamation facilities
  - Currently 100% is recycled for beneficial use
- **Recycled Water:** Approx. 300 accounts
  - 35,000 acre feet sold in CY 2016
  - Approximately 10,800 acres of agriculture irrigated by recycled water





# Sources of Water

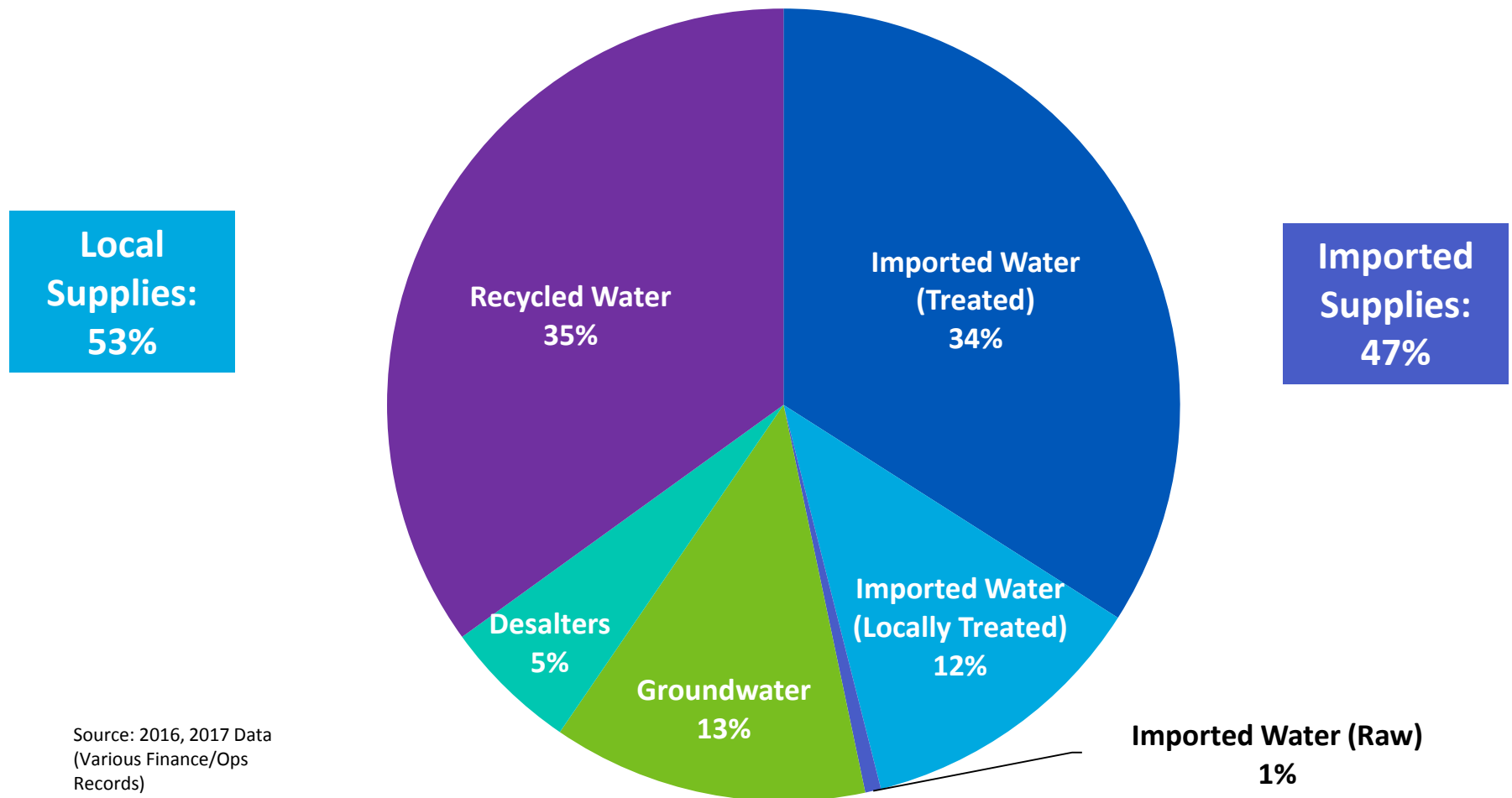


- 26 member agencies
- Owns Colorado River Aqueduct
- State Water Project Contractor
- Imports water to meet  $\frac{1}{2}$  of So. Cal retail demands
- Typical demands: 2.1 MAF (1.7 MAF in 2016 – est.)

Best Practices  
in Water Use Efficiency  
(Conservation)

# EMWD's Water Supply Portfolio

Fiscal Year 2017 - 120,502 acre feet



Source: 2016, 2017 Data  
(Various Finance/Ops  
Records)



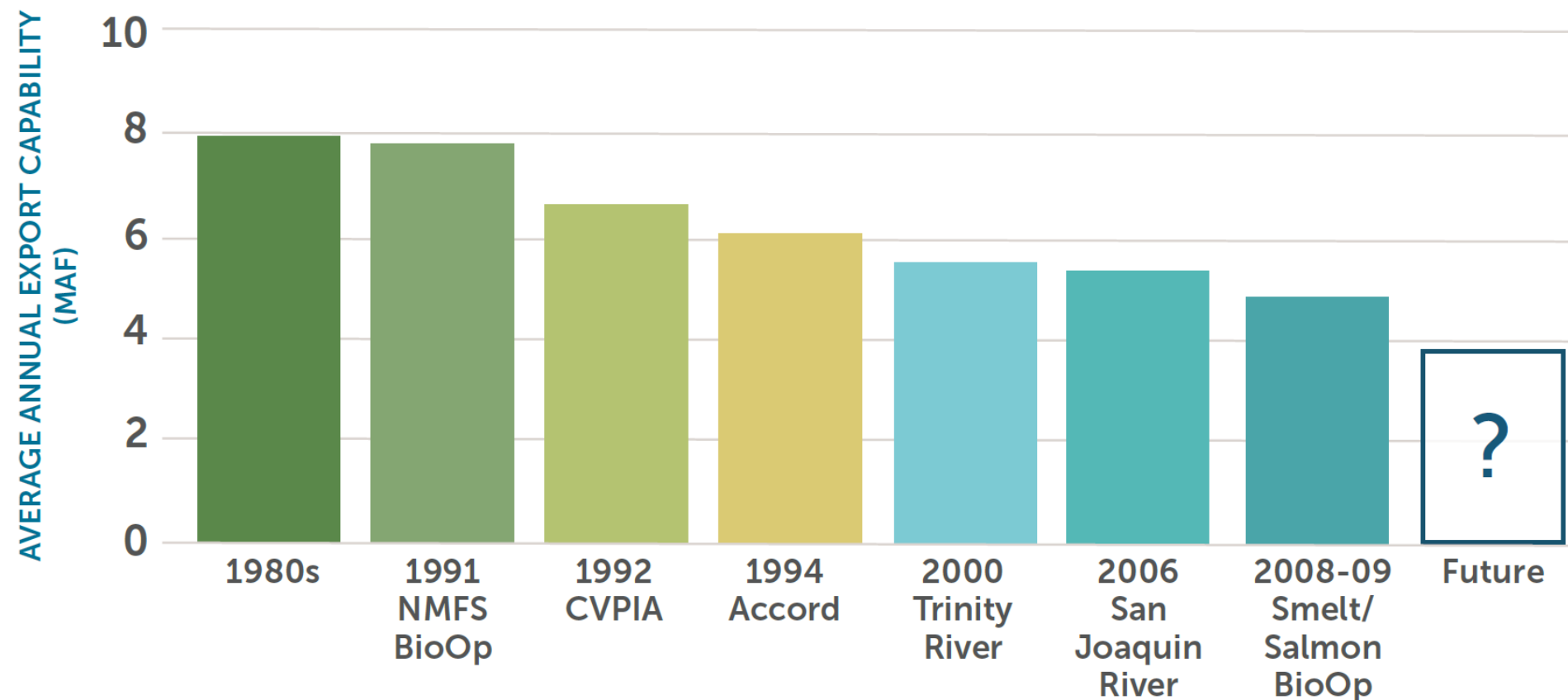
# Why Bank Water?



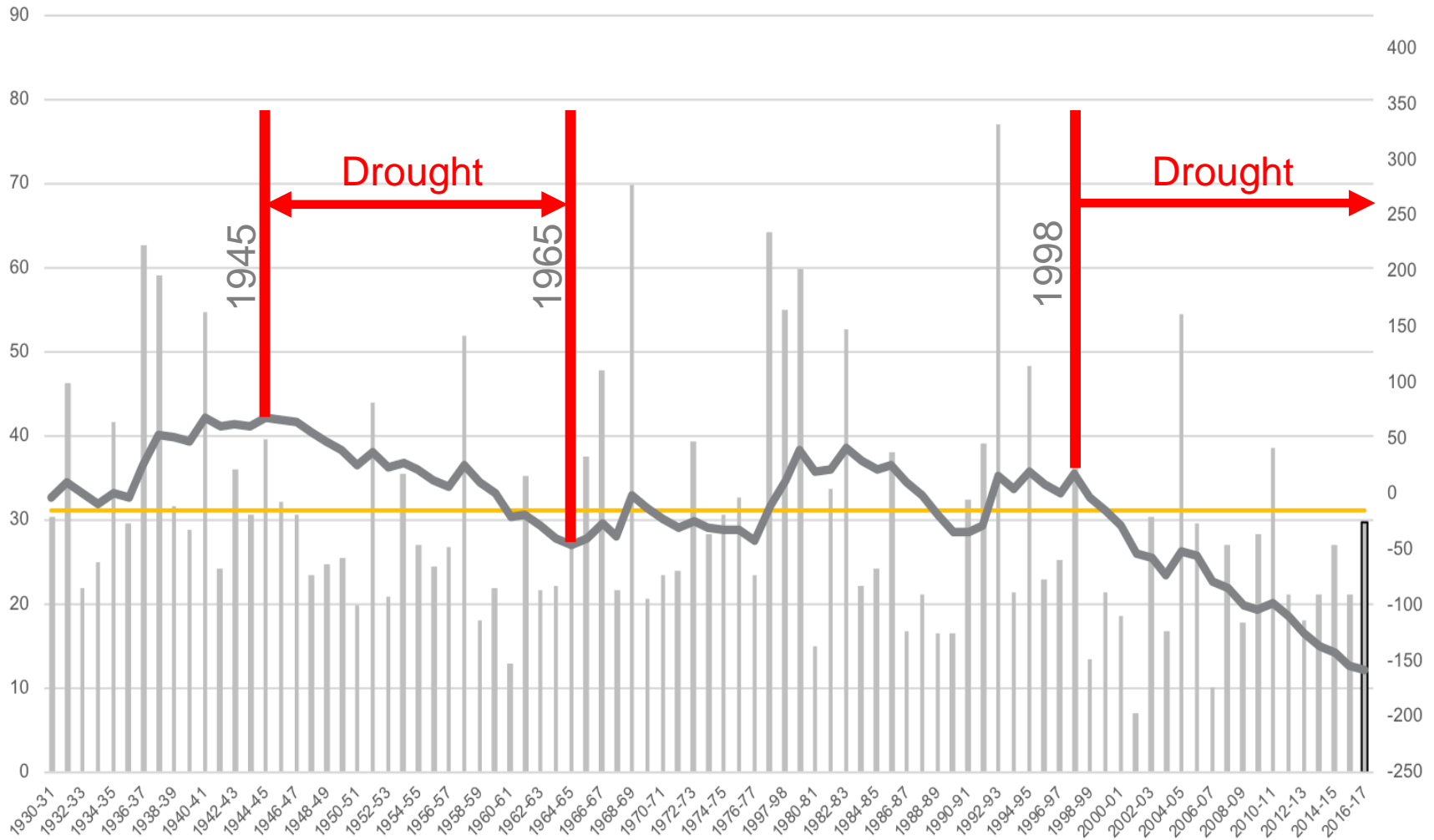
# Reliability of Imported Water has been Declining

Combined SWP and CVP Export Capabilities (MAF)

## HISTORY OF REGULATORY RESTRICTIONS



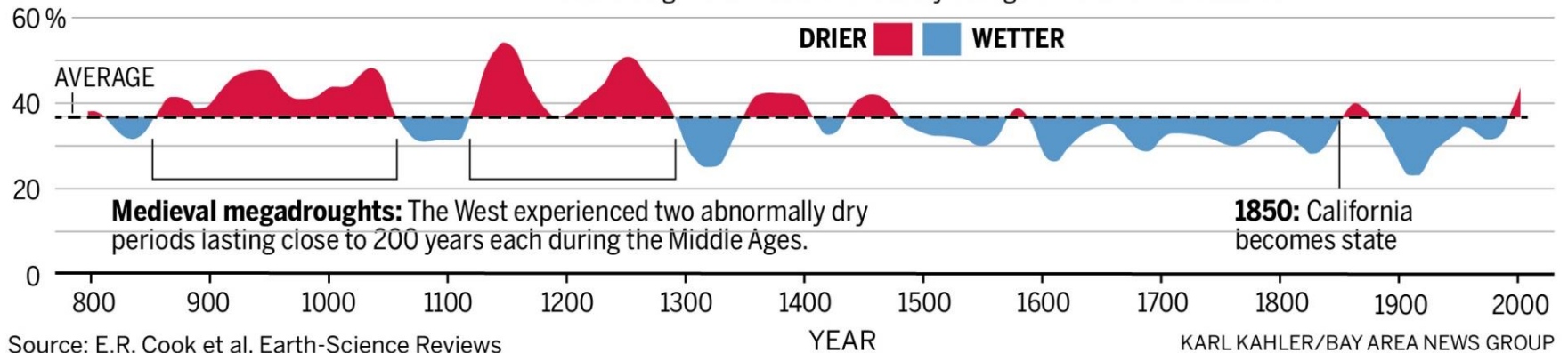
# Are 20 Year Droughts the New Normal?



# Could Droughts Last Longer?

## A 200-year drought?

Evidence from tree rings shows that drought was historically much more widespread in the American West than now, while the 20th century was wetter than normal. Percentage of the West affected by drought from 800 A.D. to 2000:



# In Wet Years, Excess Water Flows Under the Golden Gate Bridge

## Metropolitan Analysis of Excess Storm Flow Winter 2013



Increased export with isolated facility ~ 781,000 acre-feet (thru Feb 17)  
SWP/CVP export losses due to BioOp ~ 800,000 AF (larger amount of SWP loss)  
Analysis by State Water Contractors – Feb 2013



# The Solution: STORAGE

# Storage Enhances Management of Limited Supplies

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Store Water  
During Wet Years



Extract Water  
During Dry Years





# EMWD's Proposed Water Banking Program

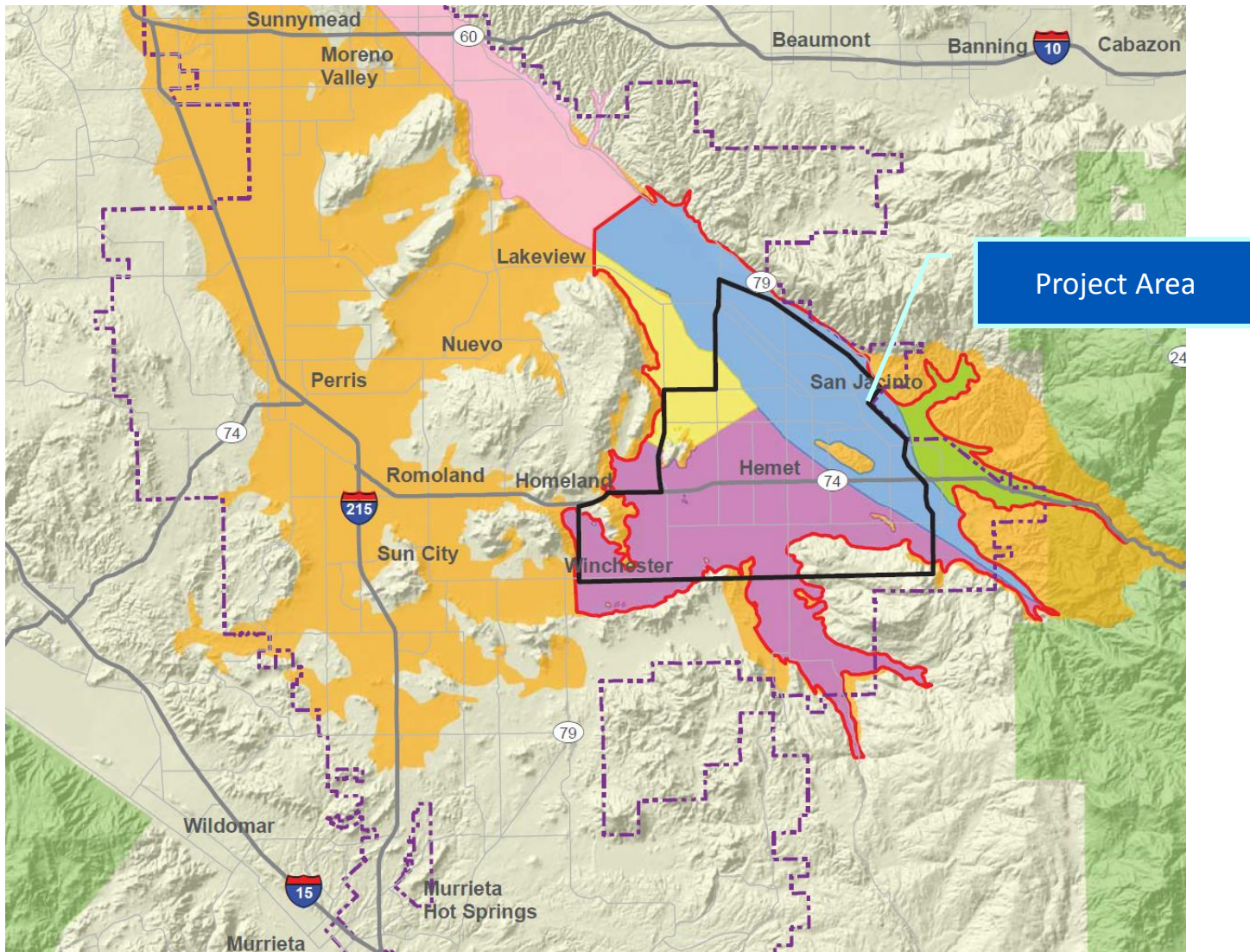
# EMWD's Water Banking Program

## Program Goals and Objectives:

- Increase local supply reliability
- Create the ability to bank low cost supplies when available
- Overcome a water shortage for three consecutive drought years
- Replenish over-draft and improve long-term stability
- Integrate different programs and opportunities including salt balance
- Provide recharge and extraction capacity in support of other agencies



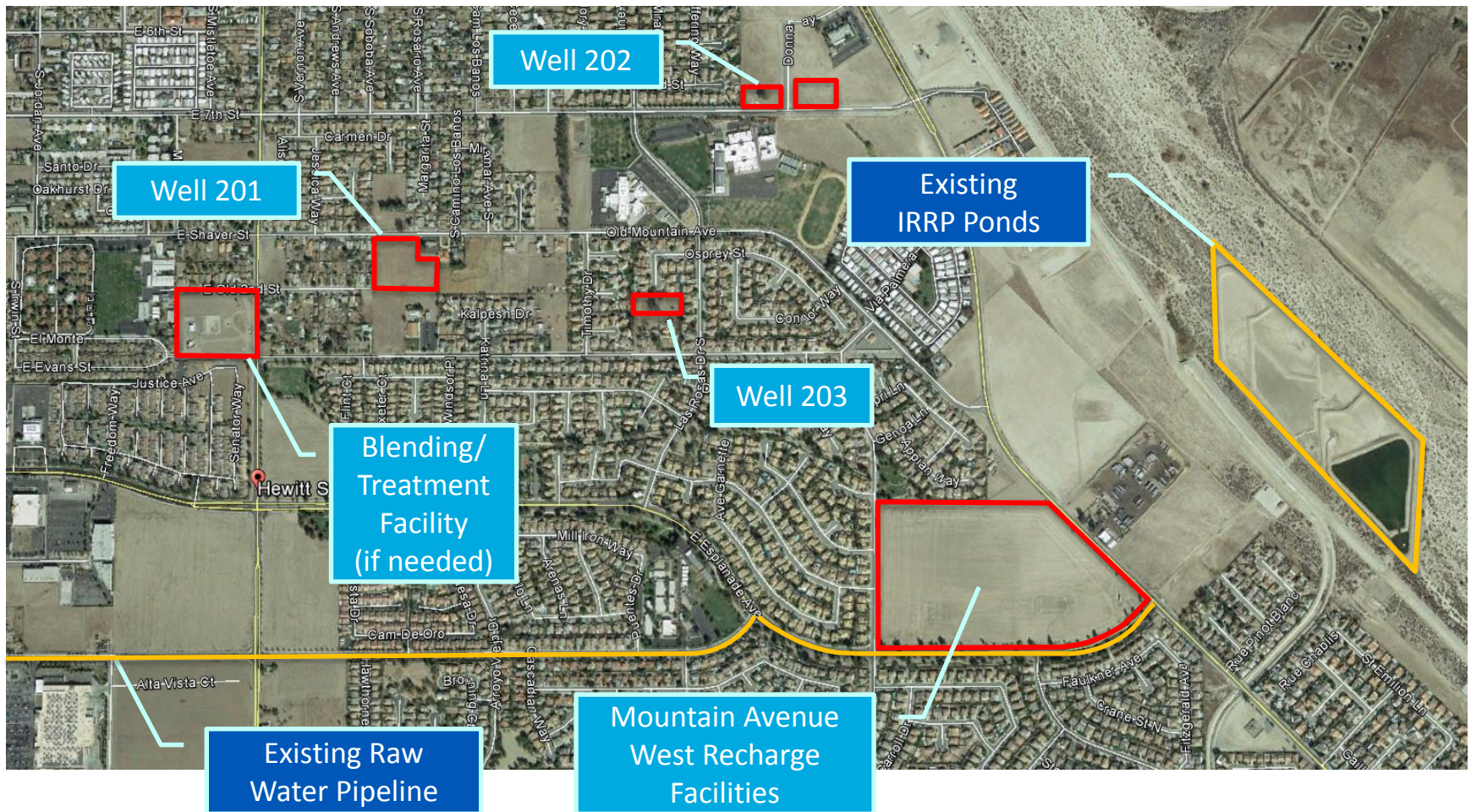
# EMWD's Water Banking Program – Phase 1 Project





# EMWD's Water Banking Program

## Phase 1 Project Facilities



# EMWD's Water Banking Program – Phase 1 Project

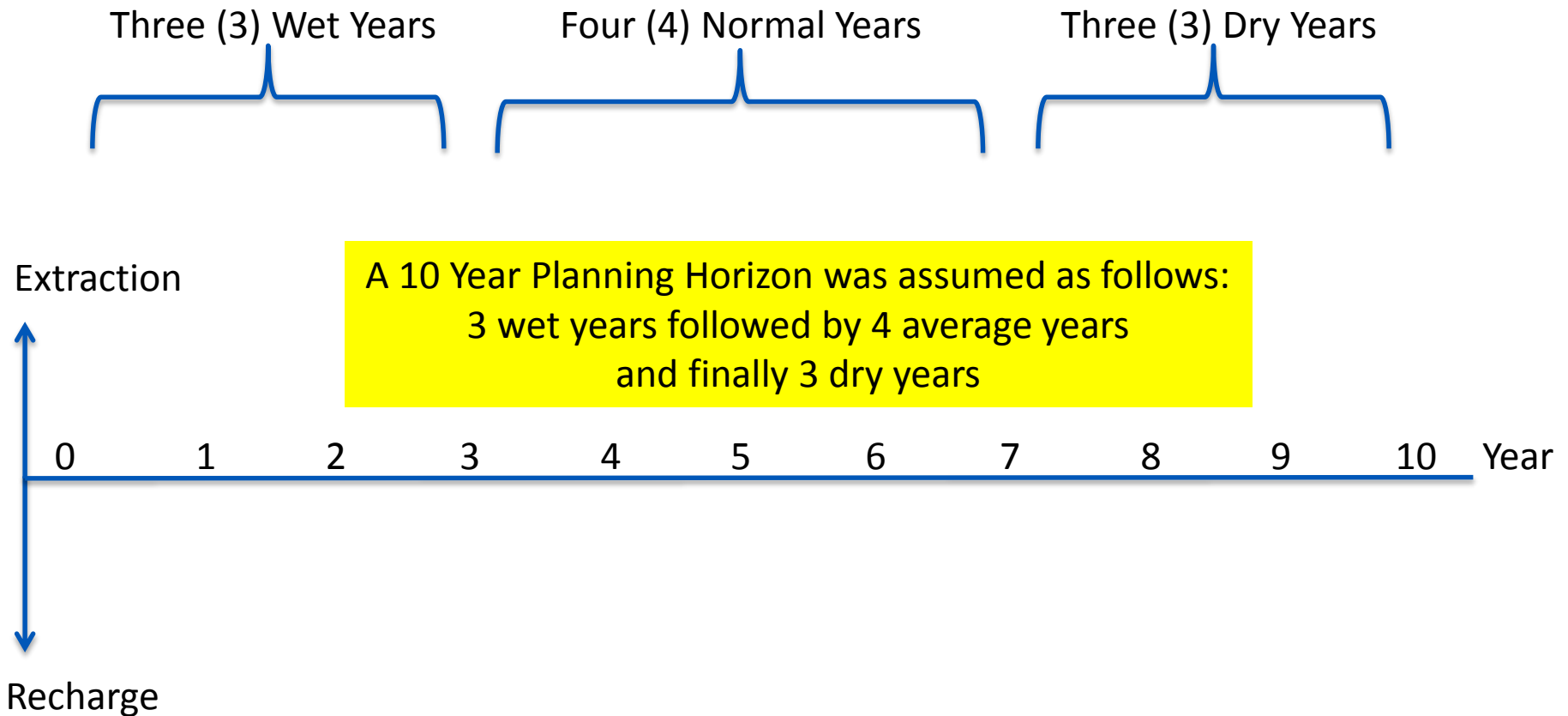
## EMWD's Phase 1 Project:

- 1) Water Banking up to 21,000 af at the Mountain Avenue West recharge facility for specific uses
  - Extract the banked water only during an emergency or drought/MWD Allocation at a rate of up to 7,000 af per year
- 2) Conjunctive Use (put and take) up to 7,000 af per year
  - Water must be recharged before it could be pumped
  - Maximum recharge could exceed 7,000 af in any year
  - Extractions would not exceed 7,000 af in any year



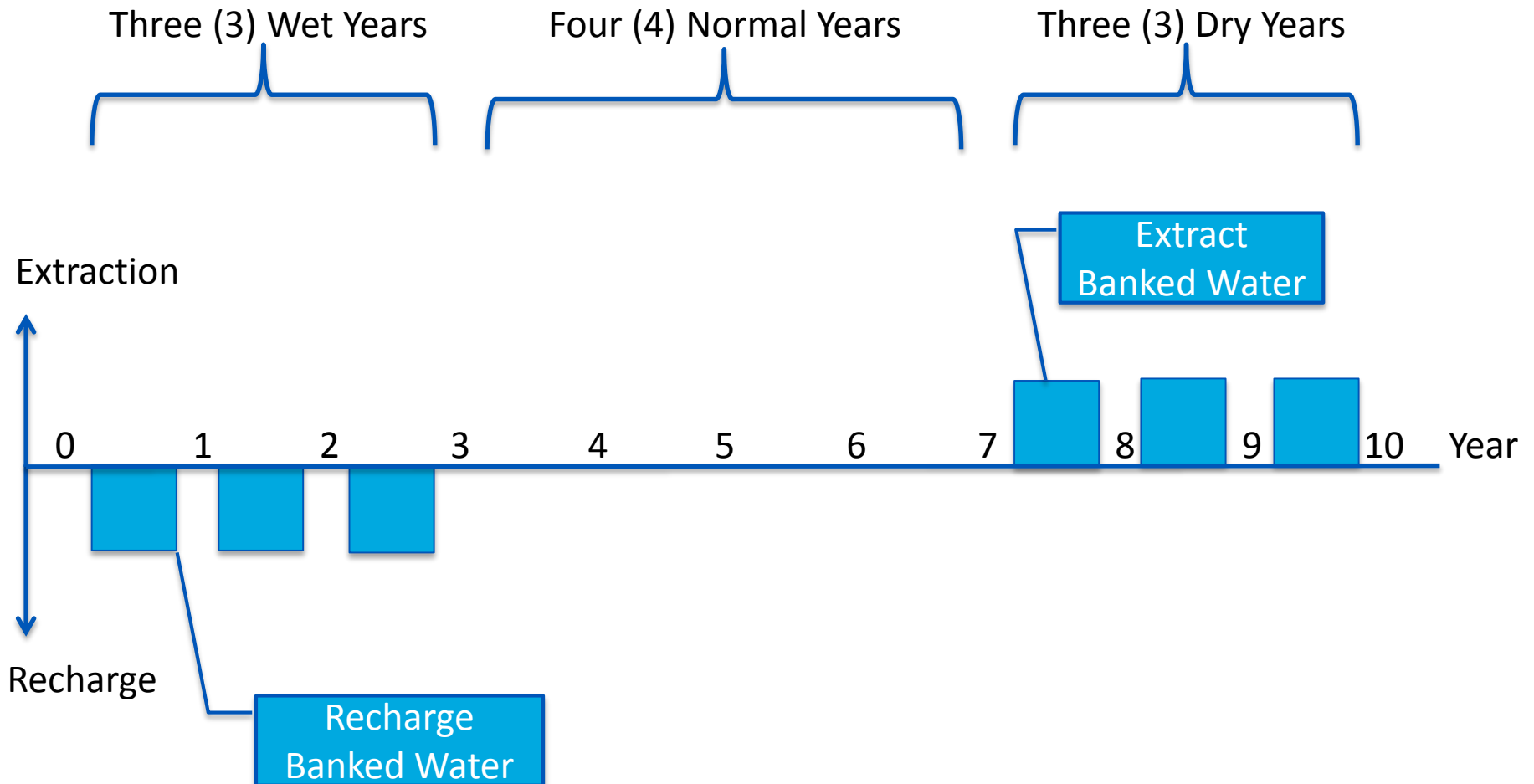
The Full Program will Bank up to 90,000 AF to provide 15% of build-out demands for 3 consecutive dry years.

# EMWD's Water Banking Program



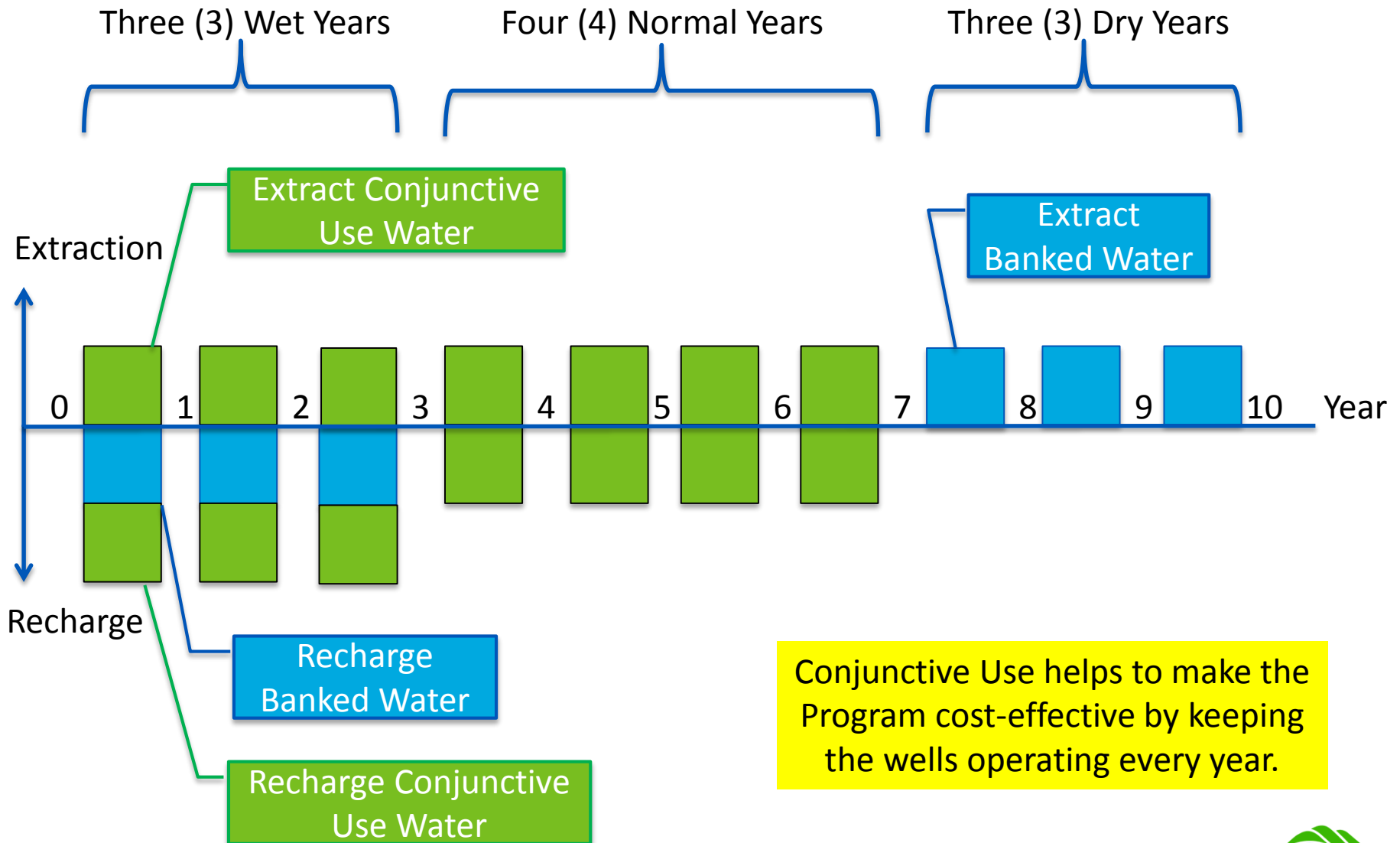


# EMWD's Water Banking Program – Water Banking



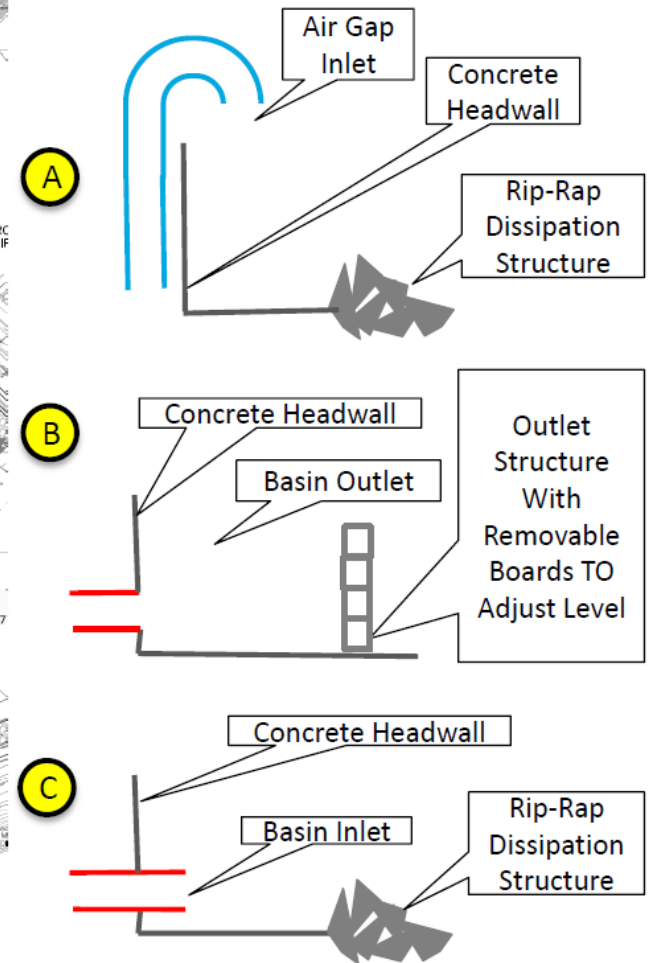
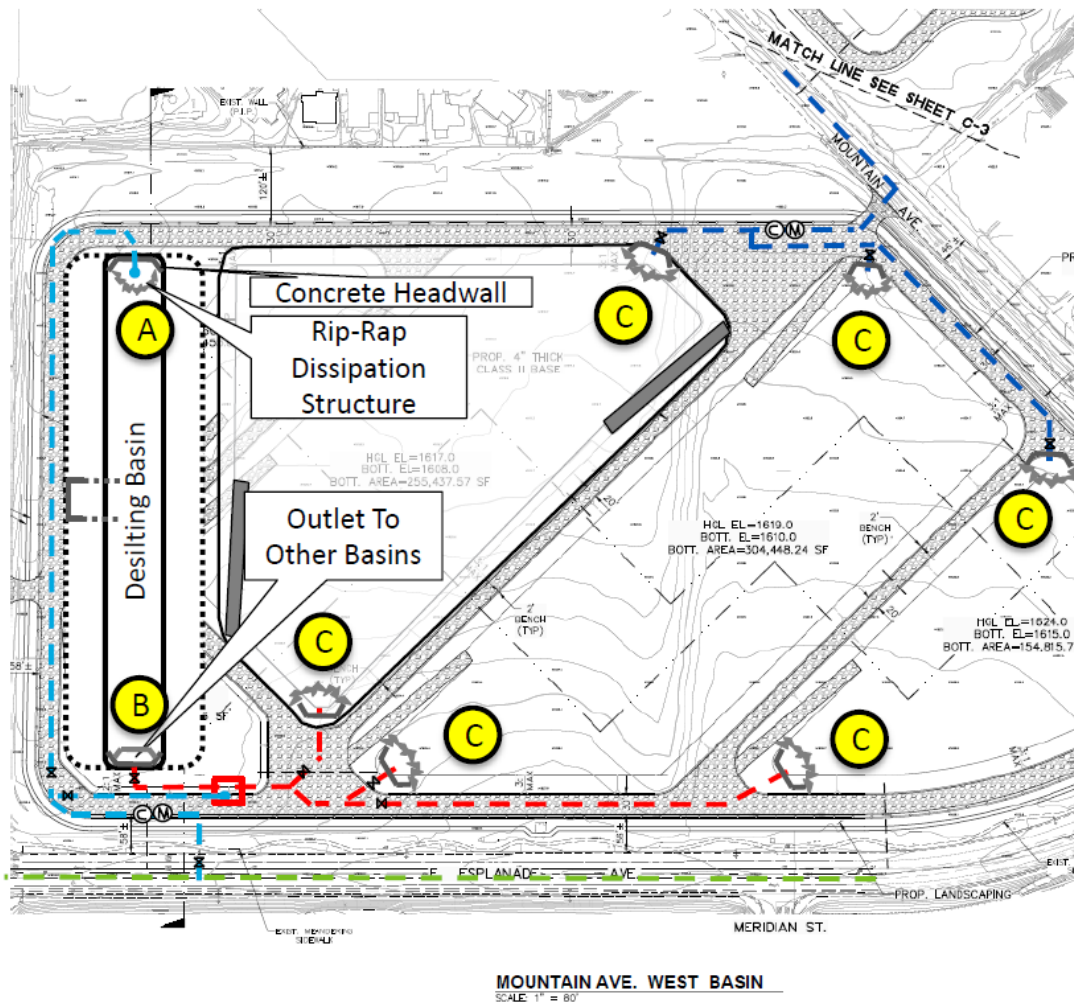
# EMWD's Water Banking Program

## Water Banking & Conjunctive Use



# EMWD's Water Banking Program

## Phase 1 Project Facilities



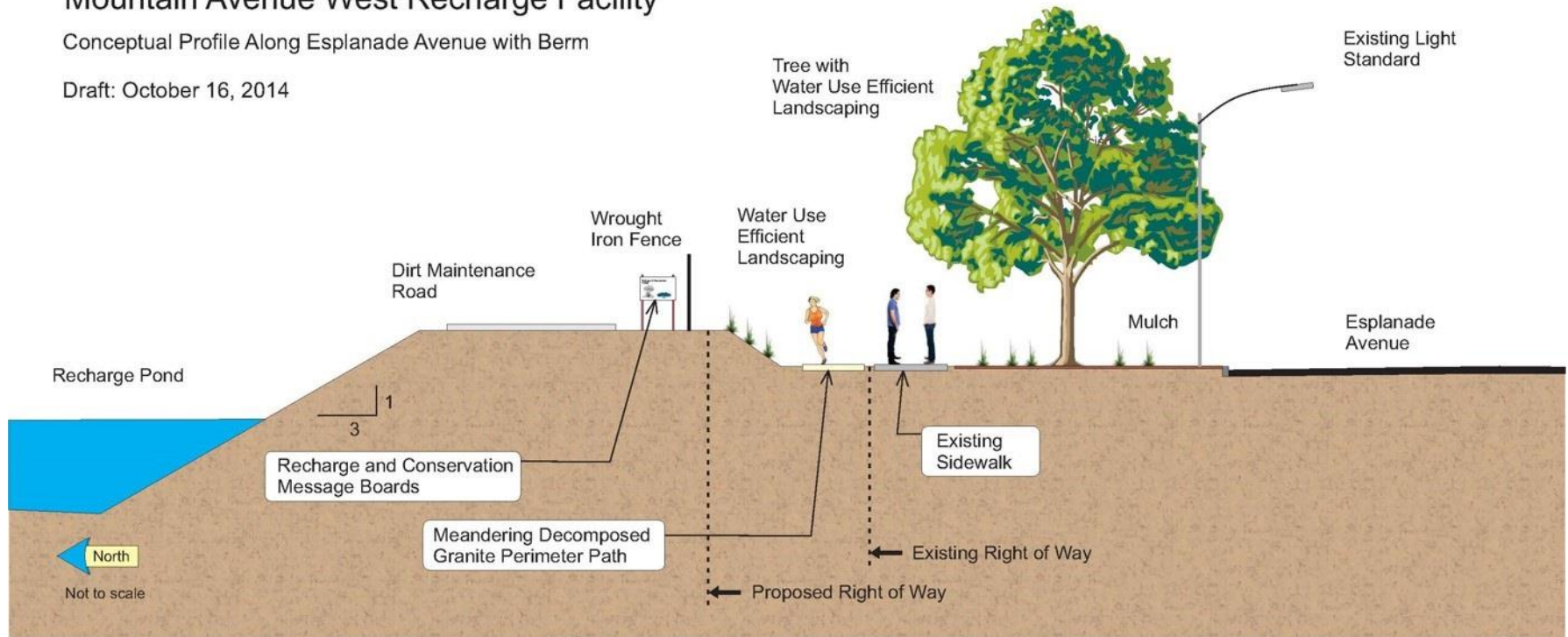
# EMWD's Water Banking Program

## Phase 1 Project Facilities

### Mountain Avenue West Recharge Facility

Conceptual Profile Along Esplanade Avenue with Berm

Draft: October 16, 2014



EMWD will provide amenities for the Recharge site as shown above

# EMWD's Water Banking Program

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## A Storage Agreement was Required with the local Watermaster

- A Technical Study was performed to analyze the impacts to the basin and neighboring pumpers
- The results indicated no significant impacts
  - Levels: Increase more than decrease
  - Water Quality: Improved with recharge of SWP supplies (no CRA due to TDS)
- The program does not result in water losses
  - About 4% of the Banked Water results in displaced water into another subbasin
  - The Conjunctive Use results in no displaced water, so all water can be recovered





# EMWD's Water Banking Program

## Phase 1 Project Facilities

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### Next Steps

- EIR Certified by EMWD's Board of Directors (6/20/2018)
- Executed Storage Agreement (June 2018)
- Begin Construction (Q3/Q4 2018)
- Complete Construction:
  - Recharge Facilities (Q4 2019)
  - Extraction Facilities (Q4 2021)







# Planning for a Future Supply Alternative: Purified Water Replenishment

# Purified Water Replenishment (PWR) Process



Disinfected  
Tertiary

Continuous

MF / RO

2,000 afy

0 - 2,000 afy Seasonal

However, a source  
of Diluent Water is  
also required.



Recharge  
Ponds

Soil

Aquifer

Treatment

Required travel time in groundwater aquifer

# Purified Water Replenishment (PWR) Process



Disinfected  
Tertiary

Continuous

MF / RO

2,000 afy

0 - 2,000 afy Seasonal

Diluent Water  
(from Water  
Banking)



Recharge  
Ponds

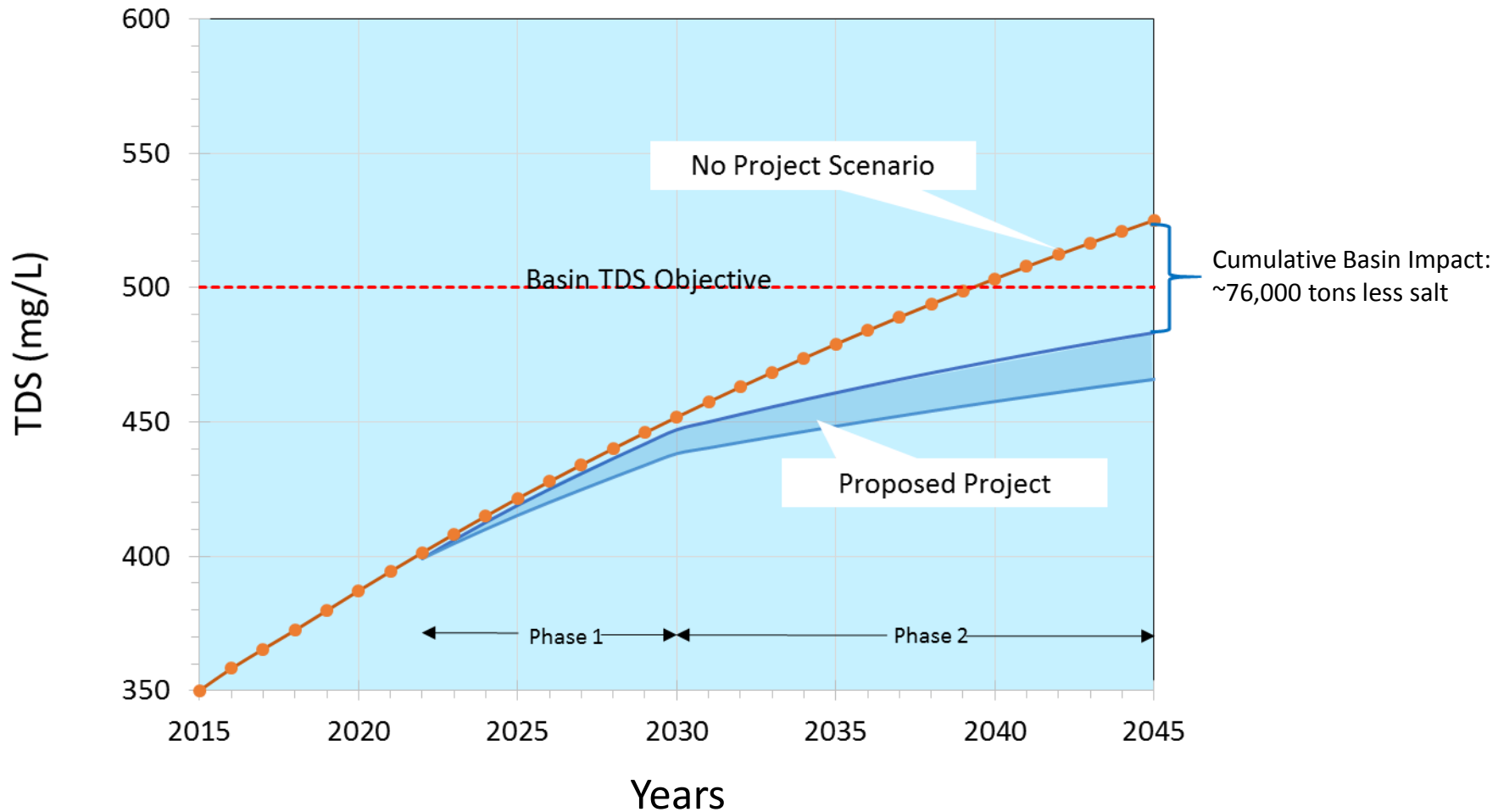
Soil

Aquifer

Treatment

Required travel time in groundwater aquifer

# Salinity Management Benefit from PWR





# Groundwater Reliability Plus

# Water Banking + PWR = Groundwater Reliability Plus

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- GRP is a group of projects that improve the quality, quantity and reliability of the water in our local groundwater basin (aquifer)
  - Water Banking
  - Purified Water Replenishment





# Groundwater Reliability Plus Schedule

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- Water Banking
  - Estimated groundbreaking: 2018
  - Estimated completion: 2020/2021
- Purified Water Replenishment
  - Outreach: 2017 & ongoing
  - Estimated groundbreaking: 2020
  - Estimated completion: 2022





# Contact Information

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