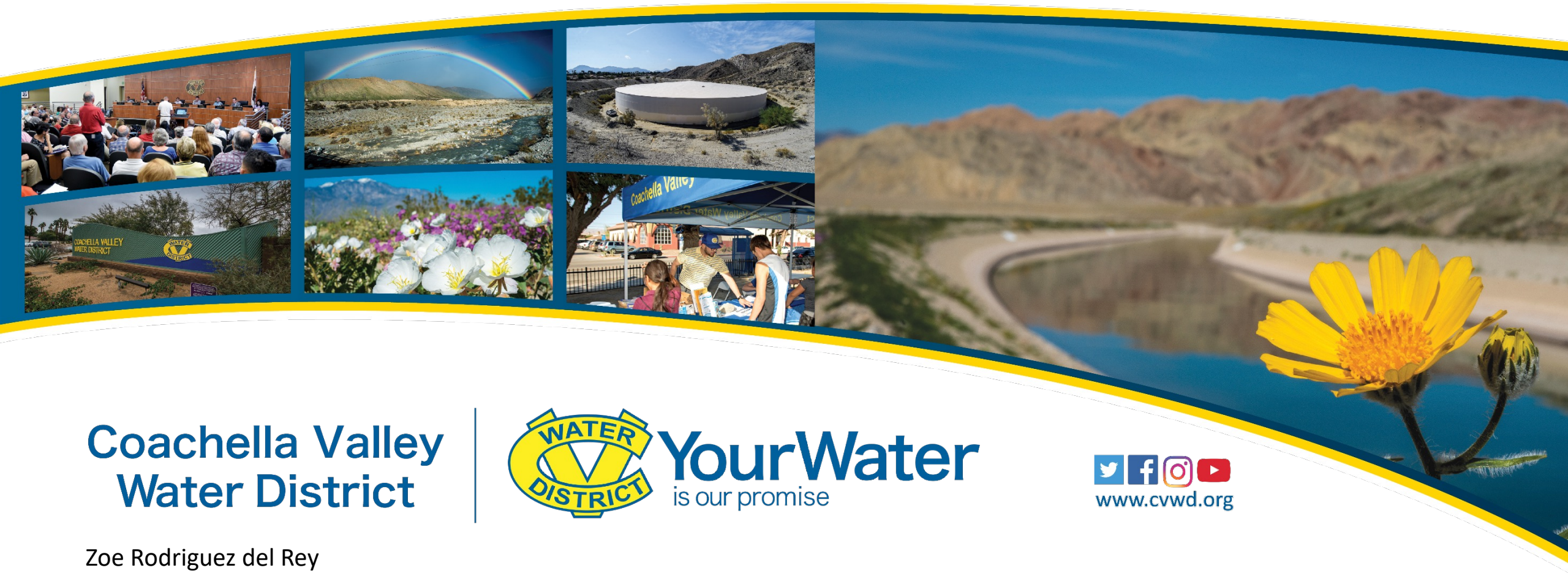
Coachella Valley Water Management

February 23, 2022



Coachella Valley Water District

WATER DISTRICT

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www.cvwd.org

Zoe Rodriguez del Rey
Water Resources Manager

Presentation Overview

1. Sources of Water Supply
2. Sustainable Groundwater Management
3. Planning for the Future

Coachella Valley Water Management

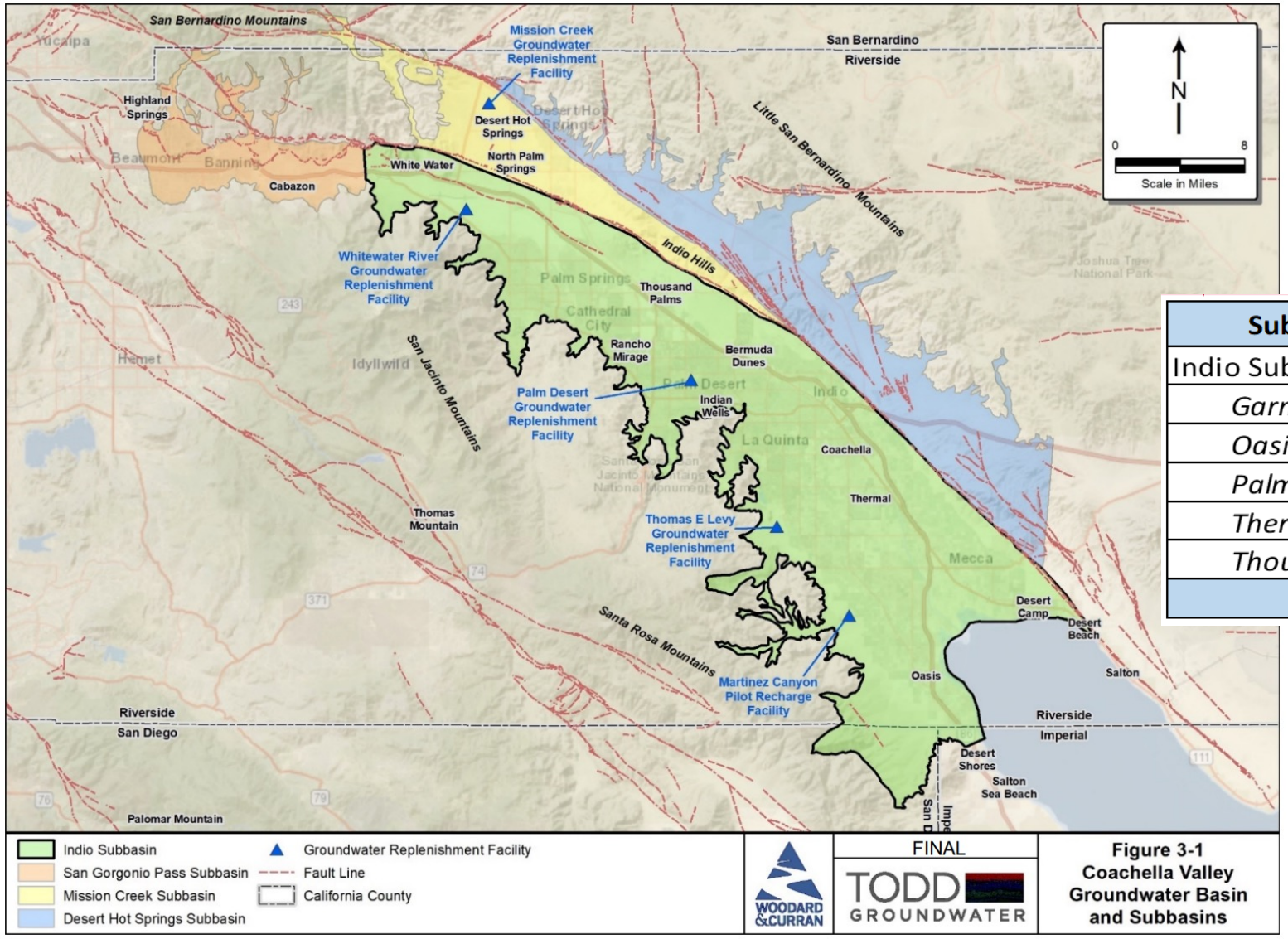
- Water management has always been integral to the Coachella Valley
- Began delivering Colorado River water in 1949 for agricultural use
- Began replenishing the groundwater basin with State Water Project Exchange water in 1973
- Adopted first Water Management Plan in 2002 *to reliably meet current and future water demands in a cost-effective and sustainable manner*

Major Sources of Water Supply

- Groundwater
- Imported Surface Water
  - Colorado River
  - State Water Project
- Recycled Water
- Surface Water

Imported surface water is recharged at the Whitewater River Groundwater Replenishment Facility

Coachella Valley Groundwater Basin



Subbasin or Subarea	Groundwater Storage (AF)[1]
Indio Subbasin	
Garnet Hill Subarea	1,000,000
Oasis Subarea	3,000,000
Palm Springs Subarea	4,600,000
Thermal Subarea	19,400,000
Thousand Palms Subarea	1,800,000
Indio Basin Total	**29,800,000**

[1]AF = acre-feet

Historical Overdraft Required Management

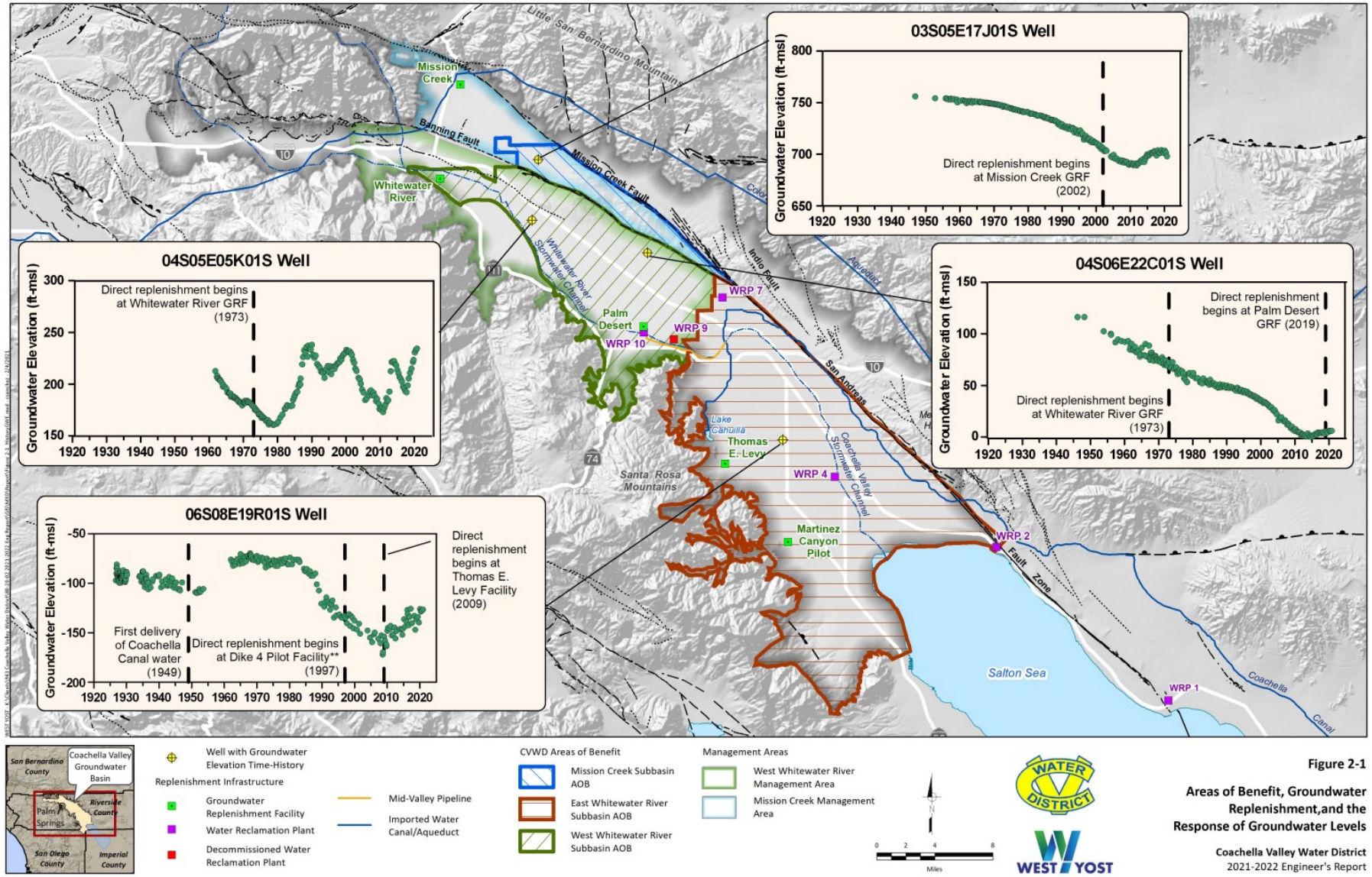
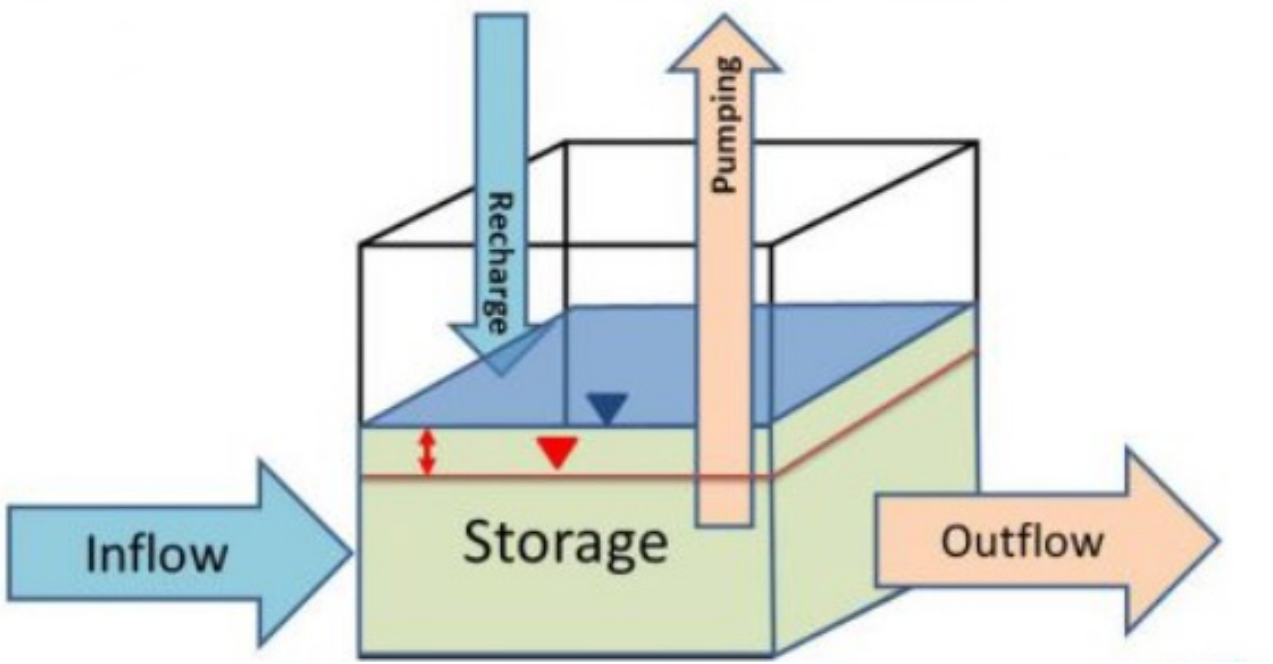


Figure 2-1

Areas of Benefit, Groundwater Replenishment,and the Response of Groundwater Levels

Coachella Valley Water District
2021-2022 Engineer's Report

Groundwater Balance



Change In Storage = Inflow – Outflow

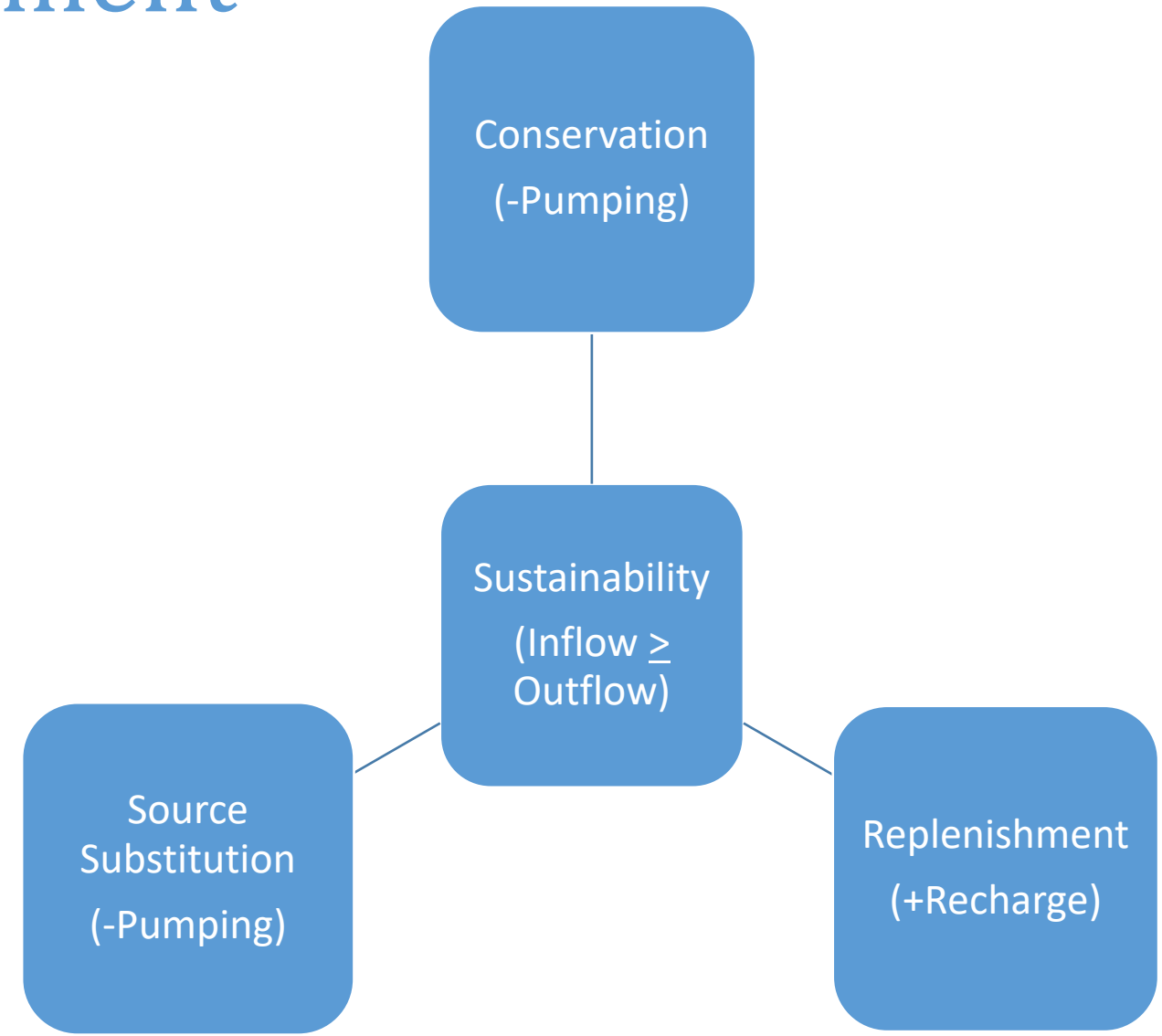
- If Outflow is greater than Inflow over a significant period of time it results in overdraft
- Overdraft can lead to undesirable results like depletion of groundwater in storage, chronic lowering of groundwater levels, land subsidence, and water quality degradation
- Sustainable management requires balancing inflows and outflows

Groundwater Management

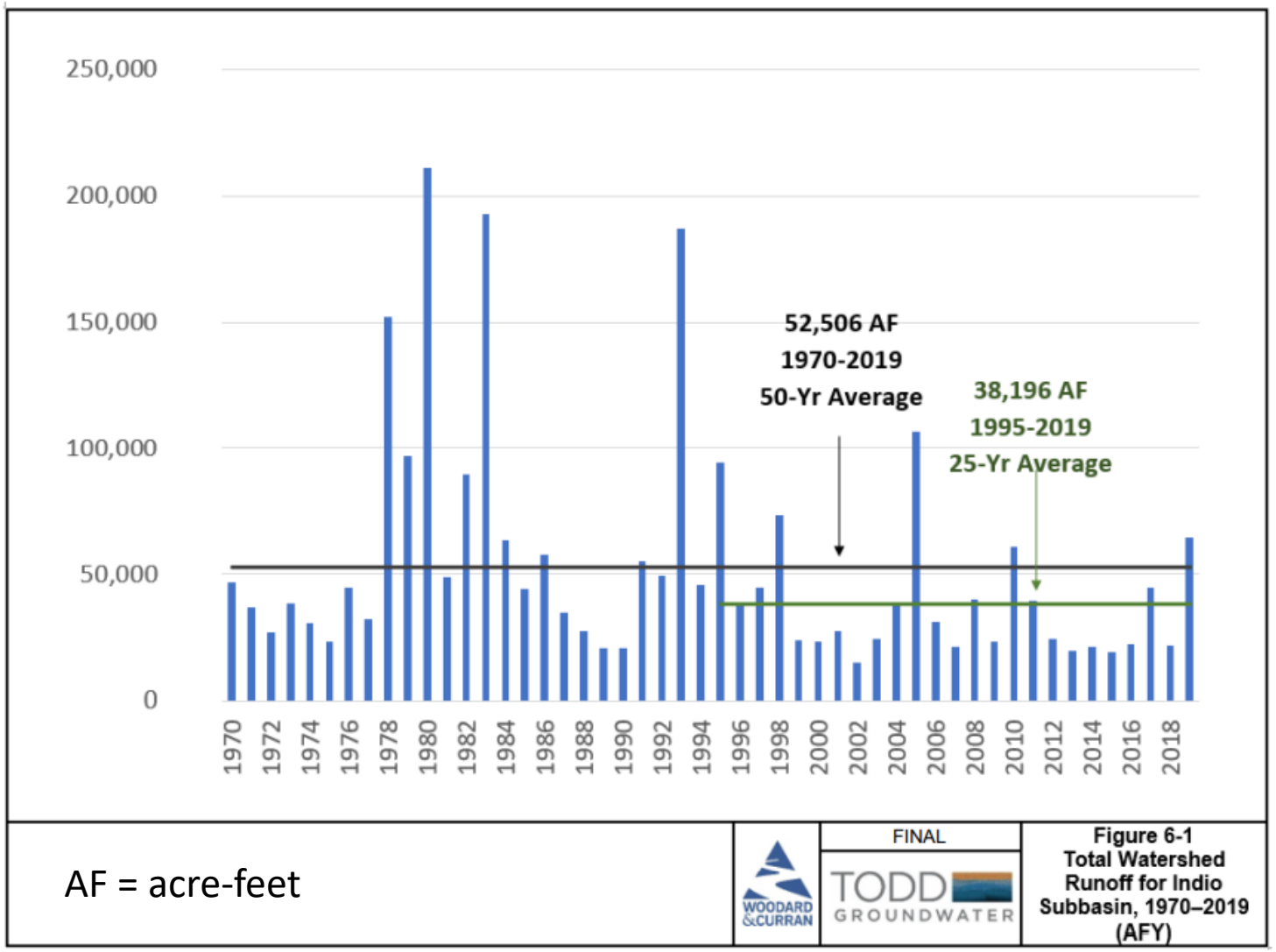
Indio Subbasin Average Groundwater Balance

	2000-2009 (AFY)	2010-2019 (AFY)
Inflows		
Natural Recharge	29,000	28,800
Subsurface inflows	11,000	11,800
Return flows from use	240,000	162,000
Total Inflow	331,000	381,500
Outflows		
Drain and subsurface	52,000	46,800
Pumping	389,000	285,600
Total Outflow	441,000	332,400
Annual Change in Storage	-110,000	+49,100

AFY = acre-feet per year

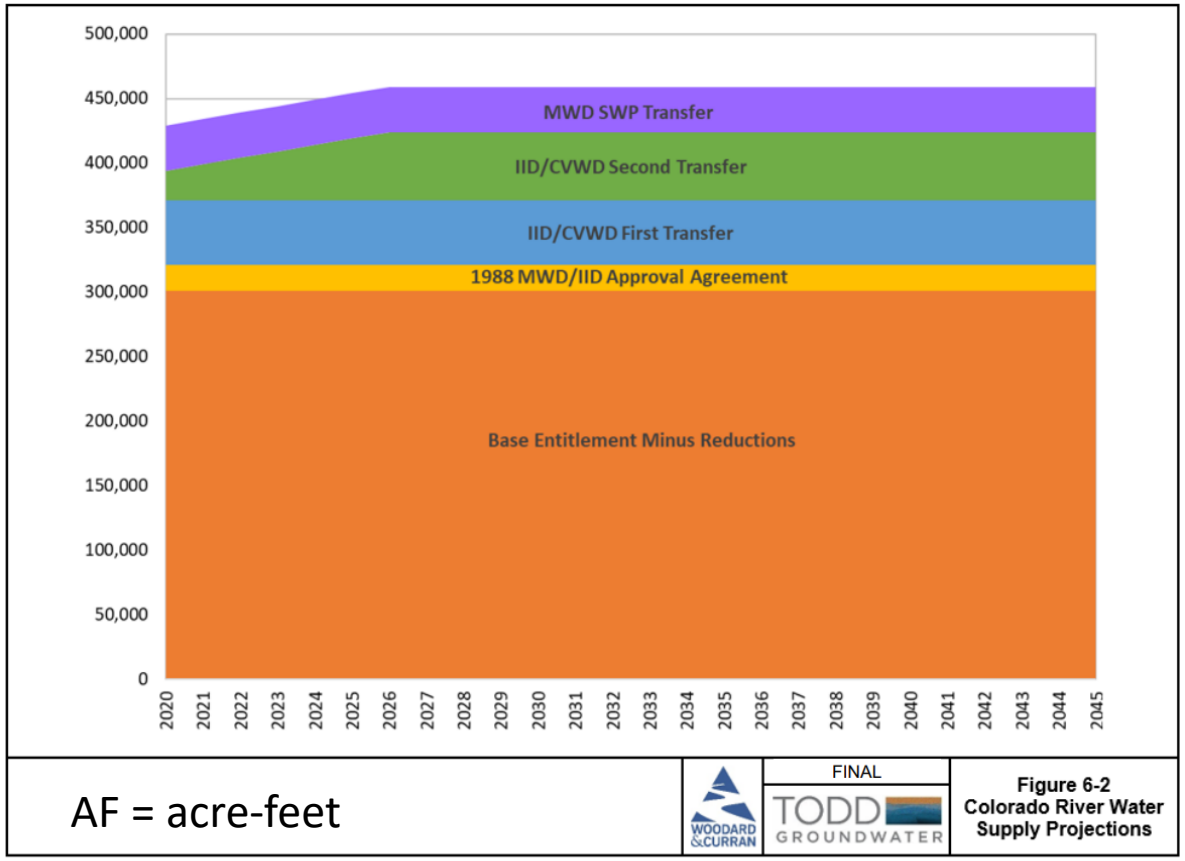


Watershed Runoff



Colorado River Water

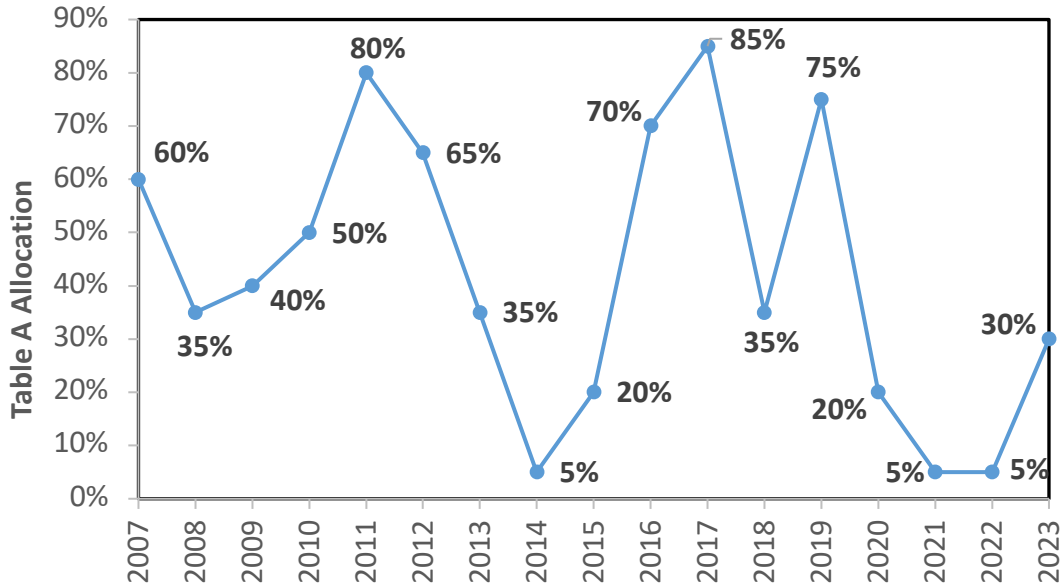
- Significant source of supply since Coachella Canal completion in 1949
- Used for agriculture irrigation, golf irrigation and groundwater replenishment
- In June 2022, Commissioner Touton called on action to cut use by 2 to 4 MAF per year
- CVWD's contributions include:
  - 500+ Plan 9,083 acre-feet (2022)
  - USBR Component 1a - Compensated Conservation Program: 35,000 acre-feet per year (2023 – 2026) pending approval
  - Potential DCP Contributions: 14,000 – 24,500 acre-feet per year based on Lake Mead Elevation



CVWD's Colorado River water allocations under the Quantification Settlement Agreement

State Water Project

- CVWD and Desert Water Agency (DWA) are both State Water Project contractors
- Used for groundwater replenishment in the northwestern portion of Coachella Valley since 1973



SWP Allocations since the 2007 Wanger Decision

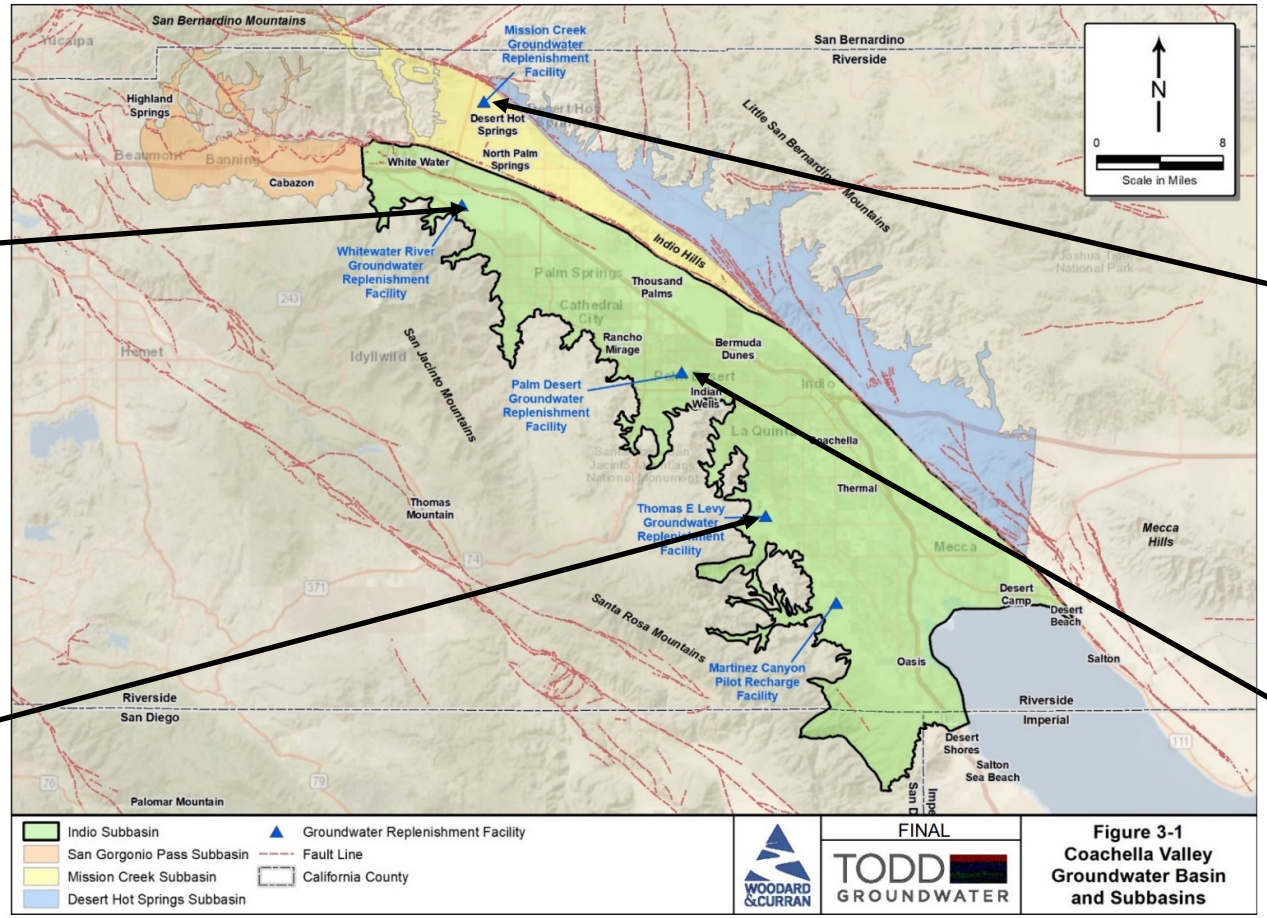
Agency	Original SWP Table A	MWD Transfer	Tulare Lake Basin Transfer 1	Tulare Lake Basin Transfer 2	Berrenda Transfer	Total
CVWD	23,100	88,100	9,900	5,250	12,000	138,350
DWA	38,100	11,900	-	1,750	4,000	55,750
Total	**61,200**	**100,000**	**9,900**	**7,000**	**16,000**	**194,100**

CVWD and DWA State Water Project Table A Amounts
In Are-Feet per Year (AFY)

Groundwater Replenishment Facilities (GRFs)

Whitewater River GRF

Thomas E. Levy GRF

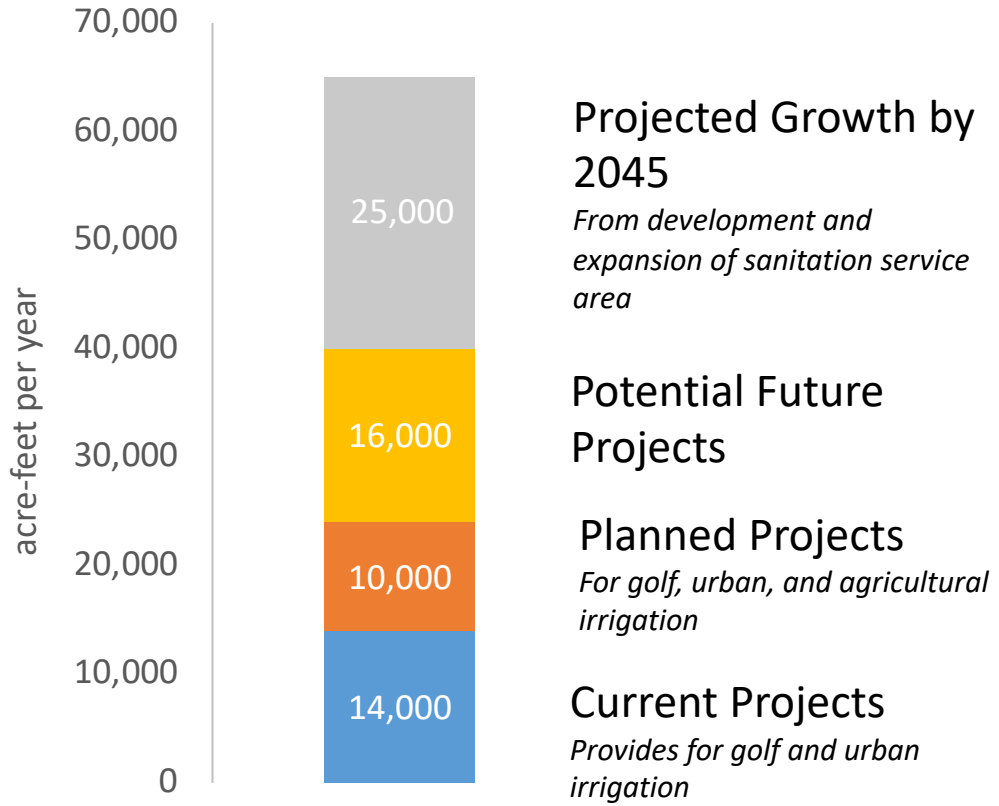


Mission Creek GRF

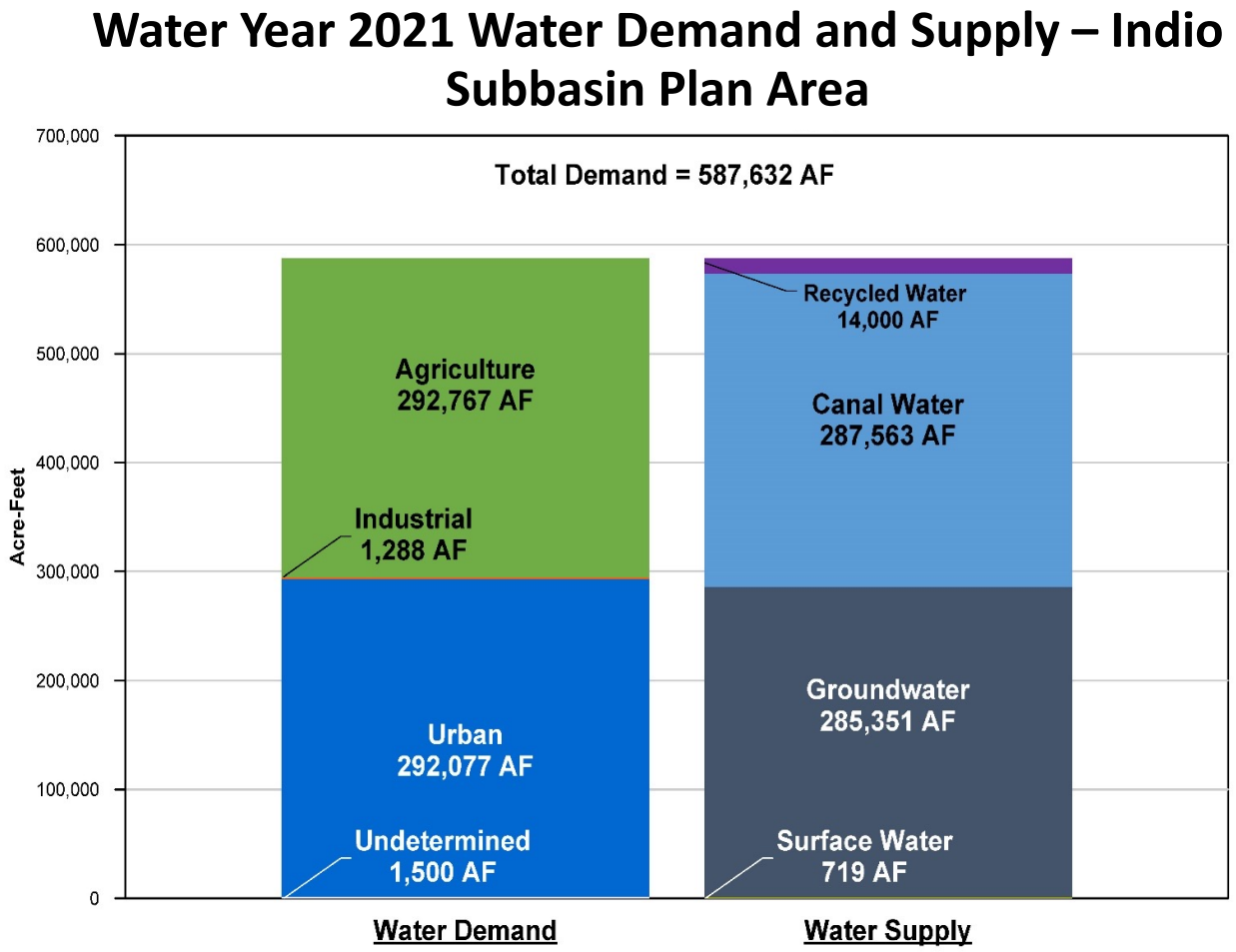
Palm Desert GRF

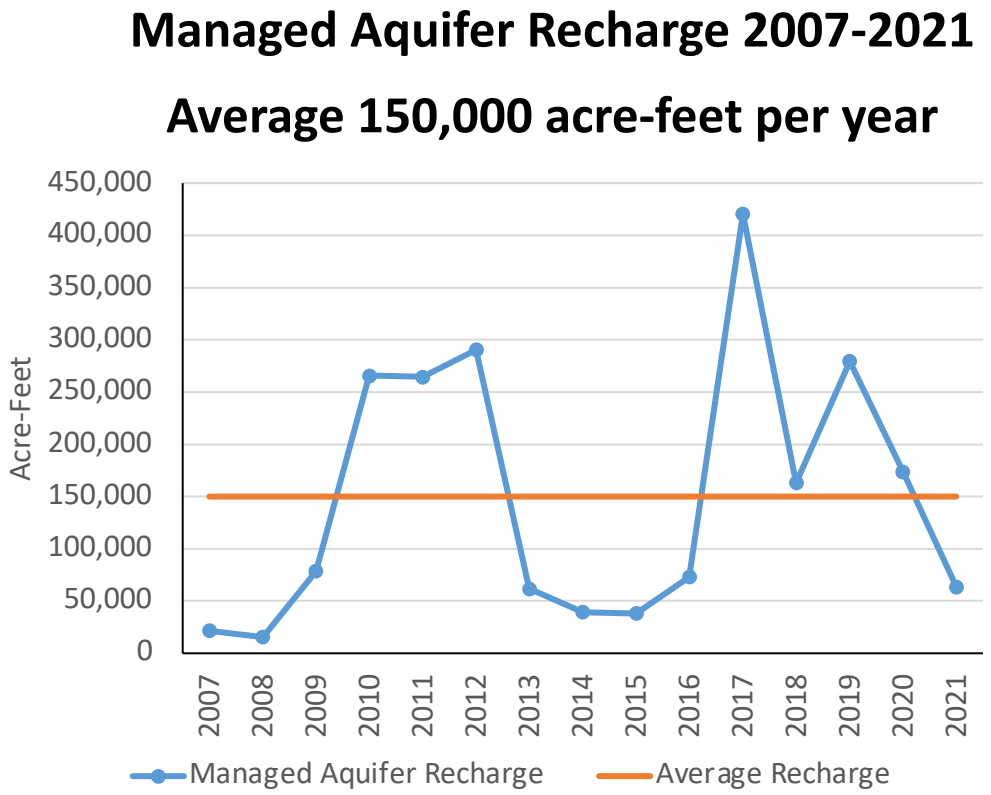
Recycled Water

- Three water reclamation plants (WRPs) currently recycle wastewater; two operated by CVWD and one operated by DWA
- Used for golf irrigation and other landscape irrigation
- Plans to expand recycled water where feasible

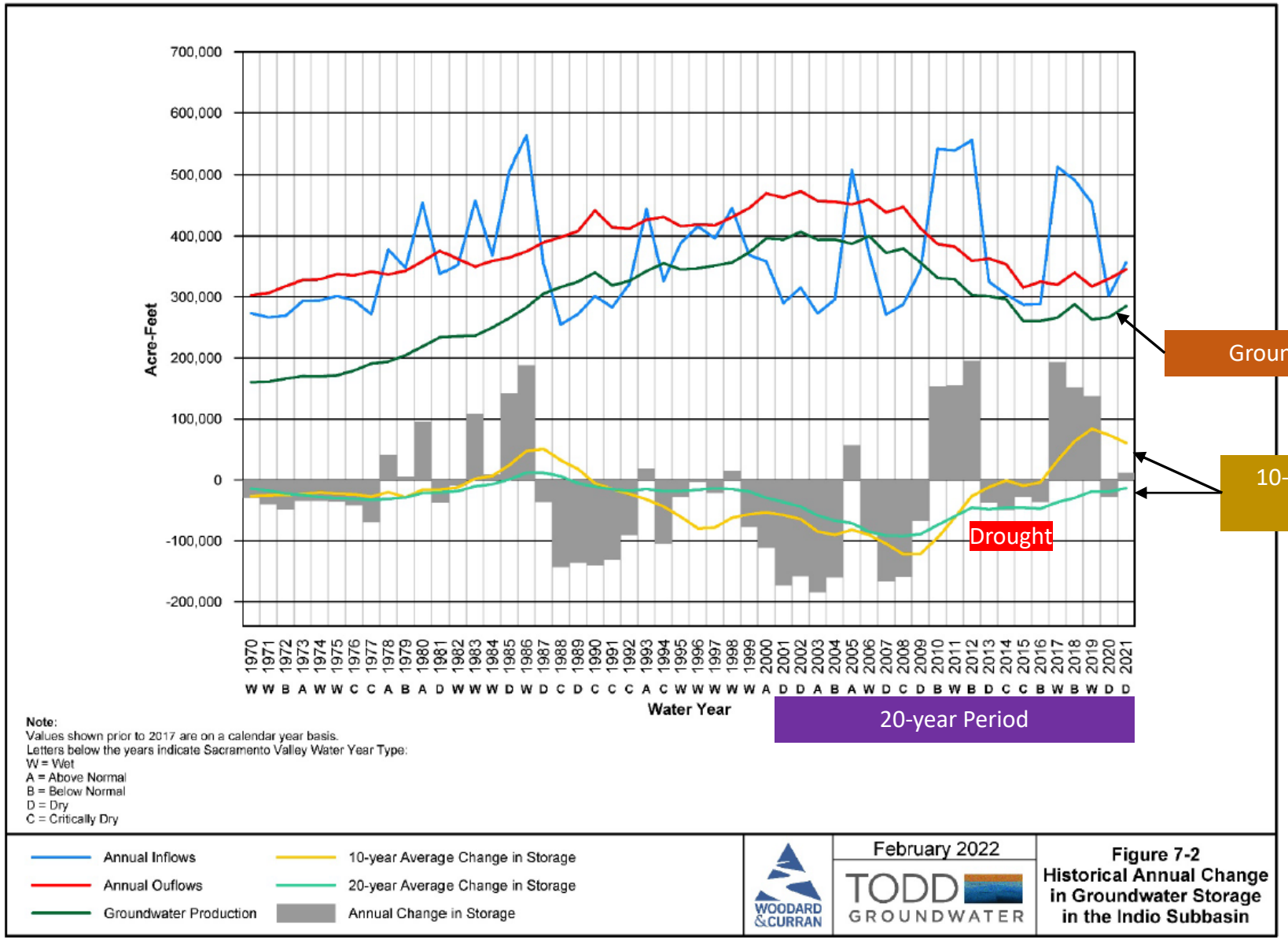


Water Demand & Supply by Source



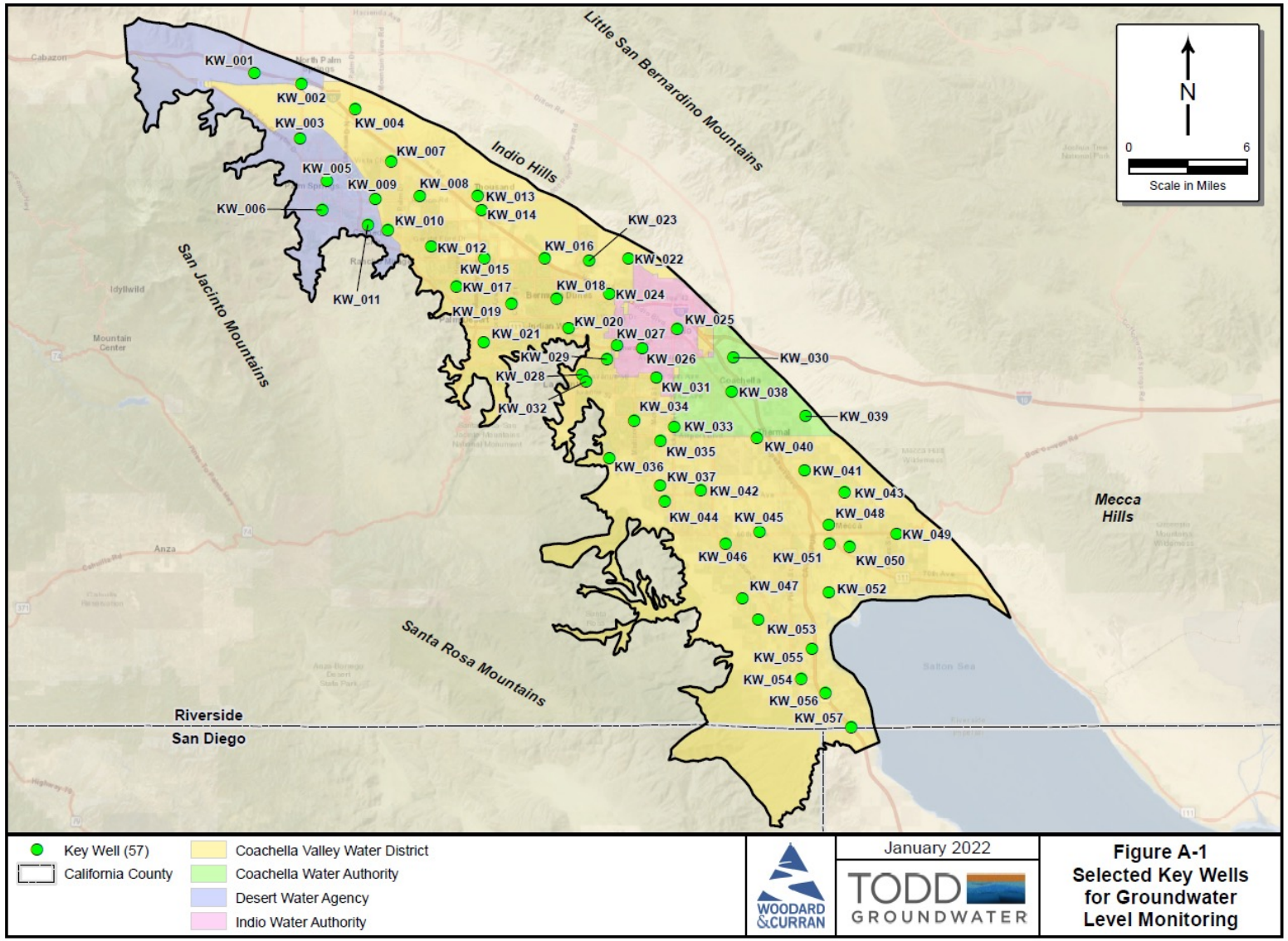


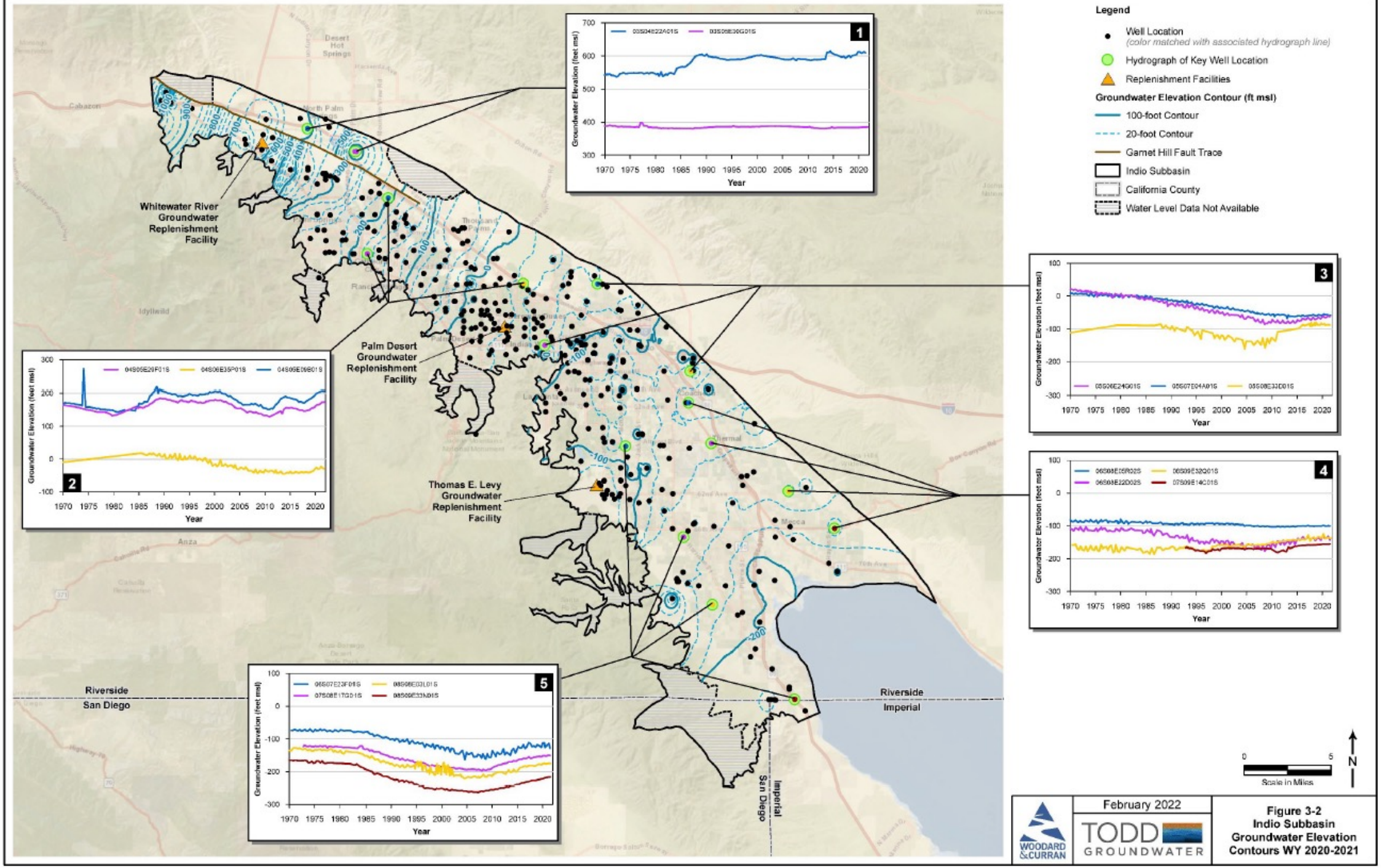
Groundwater Sustainability

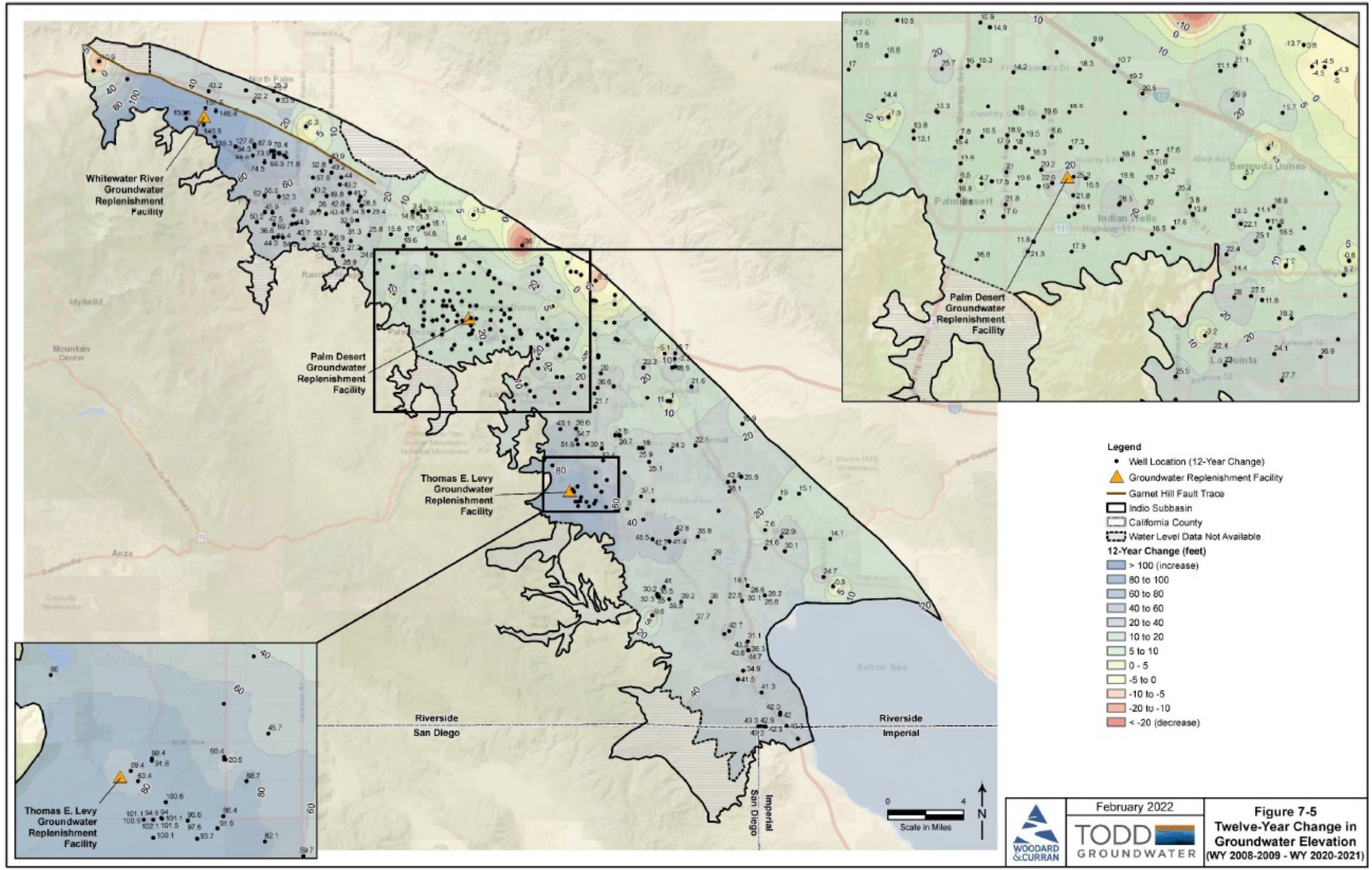


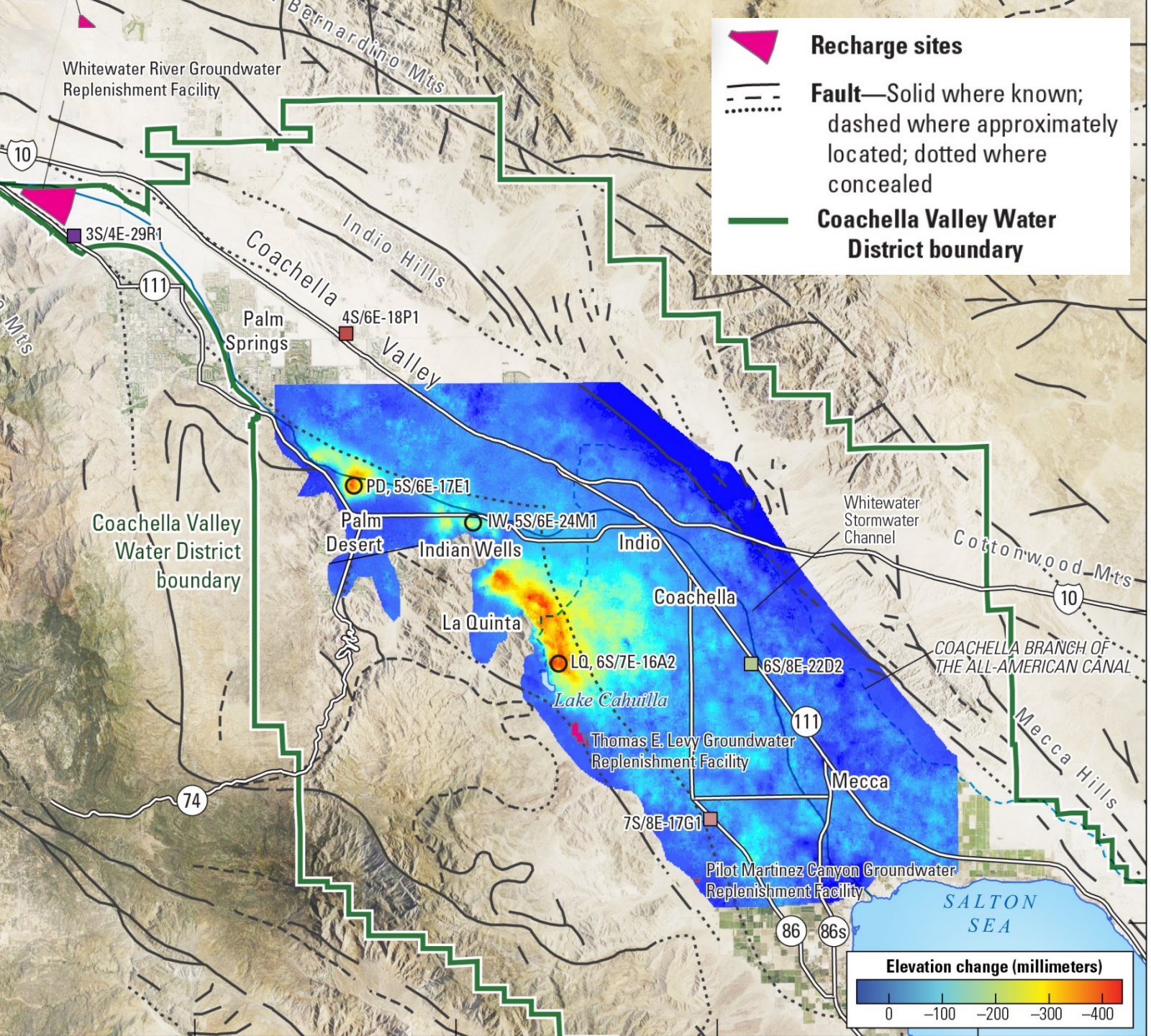
Sustainability Management Criteria

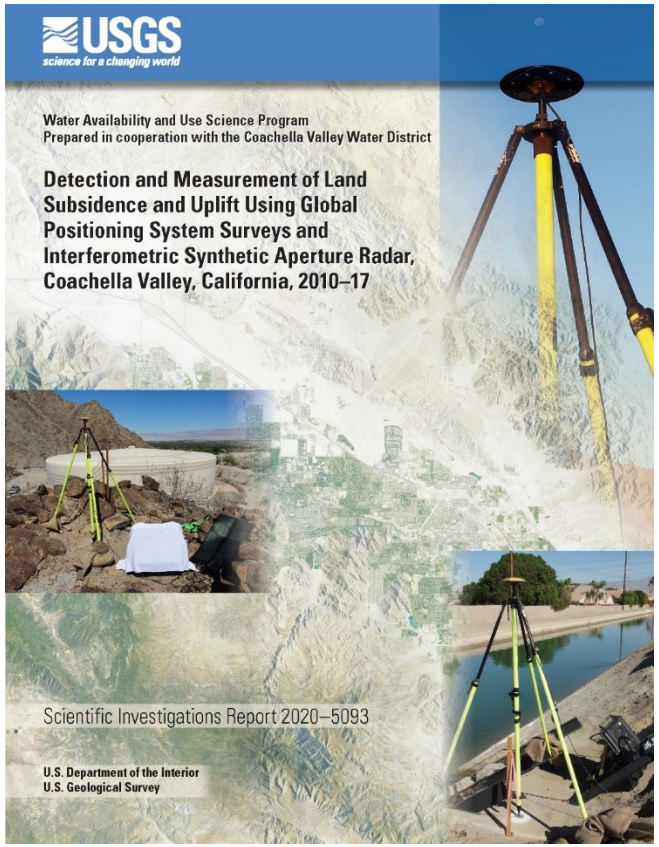
- Groundwater level criteria set at 57 Key Wells
- Criteria also referred to as Minimum Thresholds
- All 57 wells are currently above their criteria
- Proxy for groundwater storage and land subsidence




Legend
Well Location
(color matched with associated hydrograph line)
Hydrograph of Key Well Location
Replenishment Facilities
Groundwater Elevation Contour (ft msl)
100-foot Contour
20-foot Contour
Garnet Hill Fault Trace
Indio Subbasin
California County
Water Level Data Not Available
Whitewater River Groundwater Replenishment Facility
Palm Desert Groundwater Replenishment Facility
Thomas E. Levy Groundwater Replenishment Facility
Riverside
San Diego
Riverside
Imperial
San Diego
Imperial
1
2
3
4
5
Groundwater Elevation (feet msl)
Year
0
5
Scale in Miles
N
February 2022
TODD GROUNDWATER
WOODARD &CURRAN
Figure 3-2
Indio Subbasin
Groundwater Elevation
Contours WY 2020-2021


Whitewater River Groundwater Replenishment Facility
Palm Desert Groundwater Replenishment Facility
Thomas E. Levy Groundwater Replenishment Facility
Palm Desert Groundwater Replenishment Facility
Thomas E. Levy Groundwater Replenishment Facility
Riverside
San Diego
Riverside
Imperial
San Diego
Imperial
Salton Sea
Scale in Miles
N
Legend
Well Location (12-Year Change)
Groundwater Replenishment Facility
Garnet Hill Fault Trace
Indio Subbasin
California County
Water Level Data Not Available
12-Year Change (feet)
> 100 (increase)
80 to 100
60 to 80
40 to 60
20 to 40
10 to 20
5 to 10
0 - 5
-5 to 0
-10 to -5
-20 to -10
< -20 (decrease)
February 2022
TODD GROUNDWATER
WOODARD &CURRAN
Figure 7-5
Twelve-Year Change in Groundwater Elevation
(WY 2008-2009 - WY 2020-2021)





"These results mark a reversal in trends of groundwater-level declines during the preceding decades. This trend reversal provides new insights into aquifer-system mechanics. Although many areas have stopped subsiding, and a few have even uplifted, the few areas that did subside during 2010–17—albeit at a slower rate—indicate a mixed aquifer-system response."

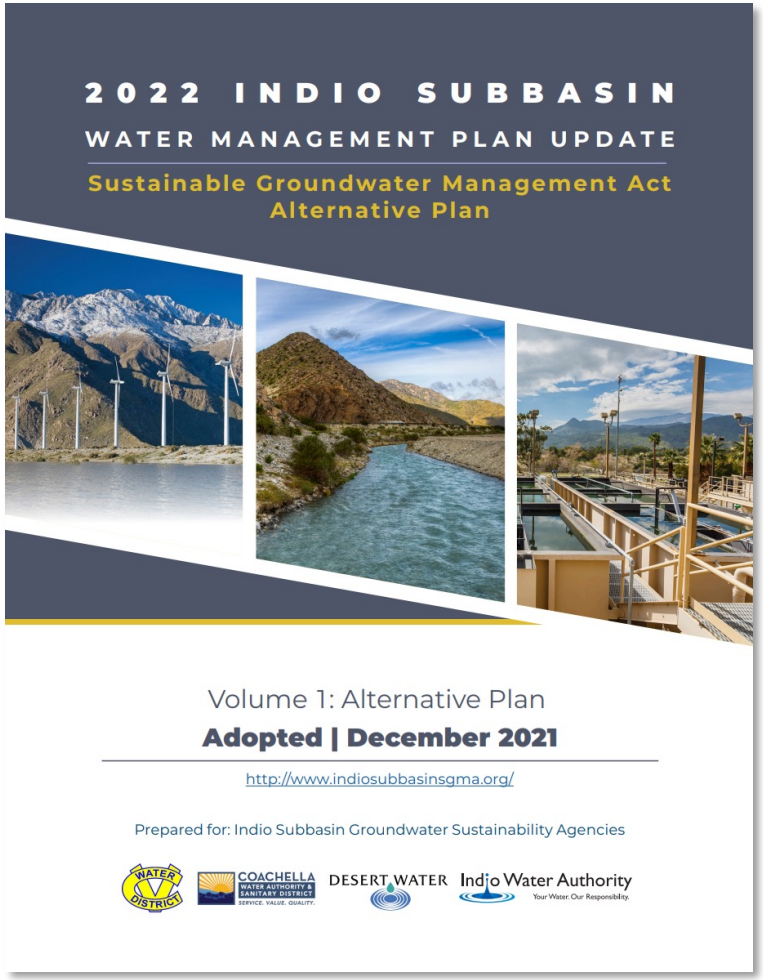
Michelle Sneed, USGS

Sustainable Groundwater Management Act

- The Sustainable Groundwater Management Act (SGMA) established statewide requirements for management of groundwater in California (2014)
- Requires groundwater to be managed sustainably within 20 years by local groundwater sustainability agencies (GSAs) who must develop Groundwater Sustainability Plans (GSPs)
- The GSAs of the Indio Subbasin collaboratively submitted the Coachella Valley Water Management Plan as an Alternative to a GSP for the Indio Subbasin
- The Department of Water Resources (DWR) approved the Alternative in July 2019 and required that an update be submitted by January 1, 2022, and every five years thereafter

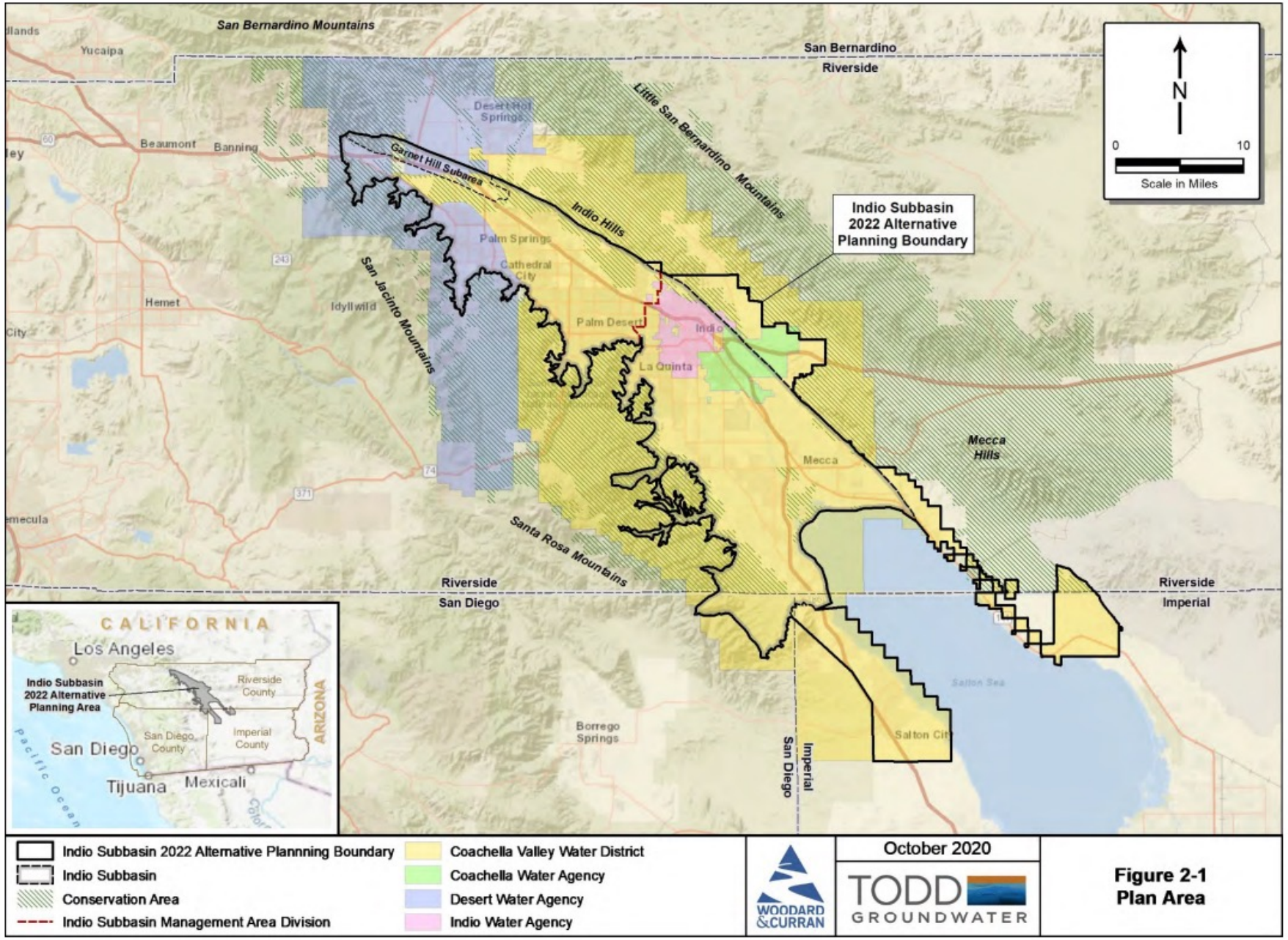
2022 Indio Subbasin Water Management Plan Update – SGMA Alternative Plan

- Water Management Plan periodically updated
  - Population growth forecast
  - Changes in planned land uses
  - Water demand projections
  - Water supply outlook
  - Projects and management actions
- Periodic evaluation and update required every 5 years by SGMA



Plan Area

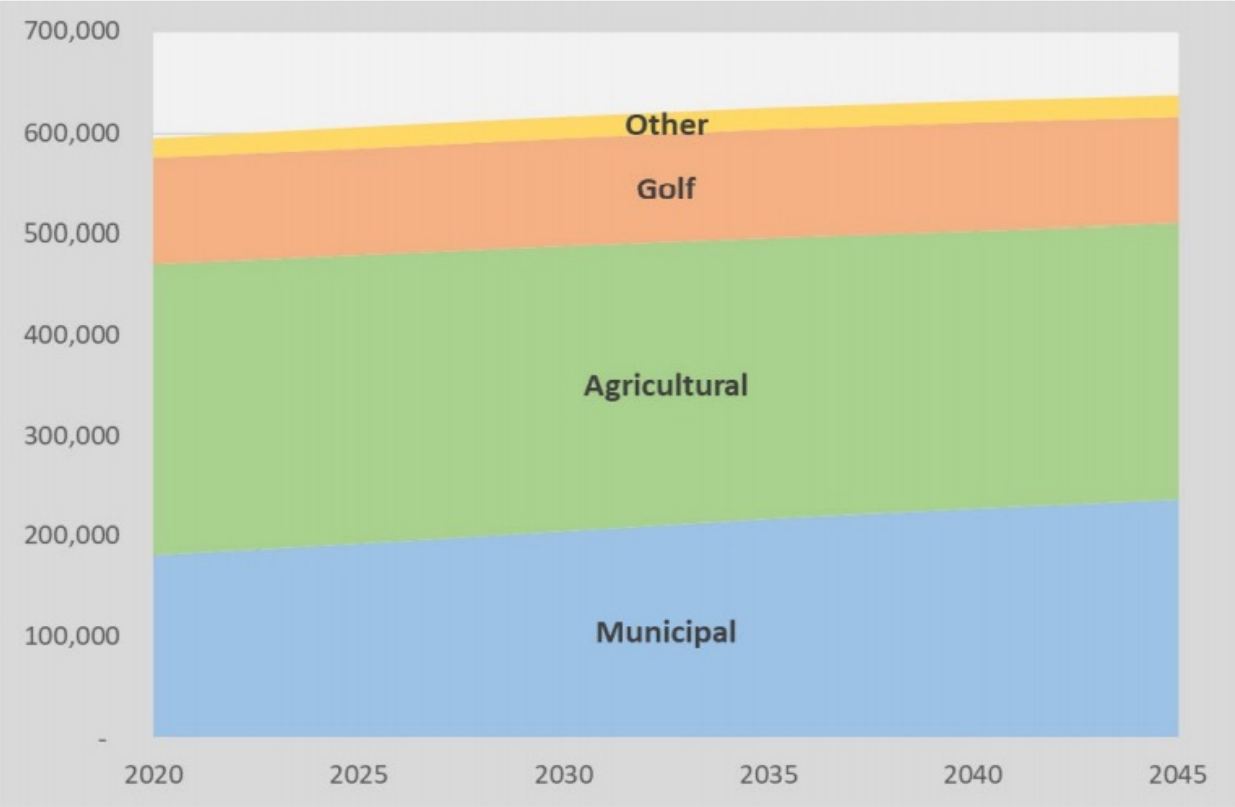
- Indio Subbasin
- Areas currently served by or expected to be served by groundwater from the Subbasin



Plan Goals & Objectives

- Meet current & future water demands with 10% municipal supply buffer
- Avoid chronic groundwater overdraft
- Manage and protect water quality
- Collaborate with tribes and state and federal agencies on shared objectives
- Manage future costs
- Minimize adverse environmental impacts
- Reduce vulnerability to climate change and drought impacts

Water Demand Projections (AFY)

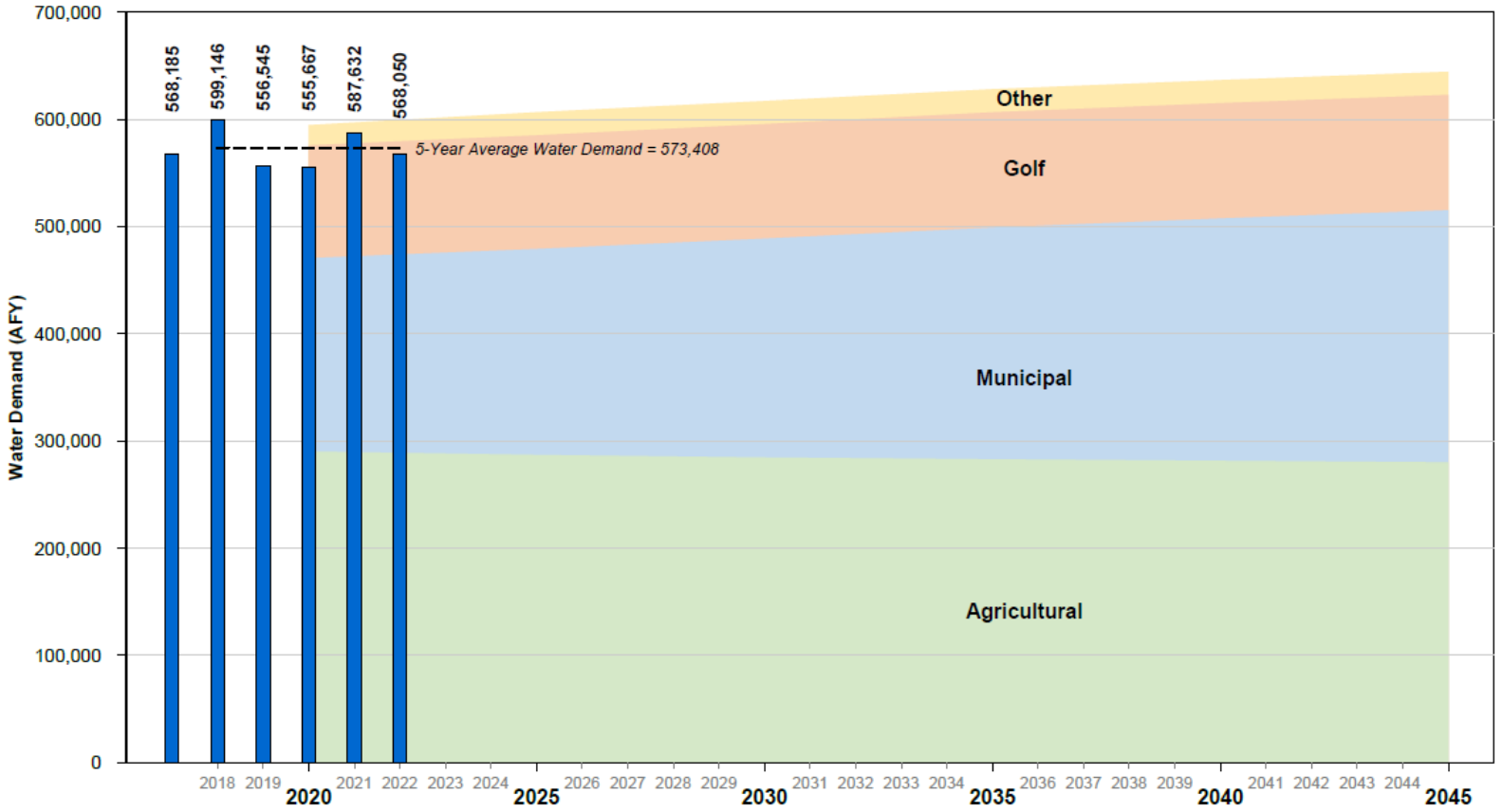


Water Demand Type	2020	2025	2030	2035	2040	2045
Municipal	180,318	192,098	204,163	216,074	225,997	235,148
Agricultural	290,312	287,092	284,693	283,045	281,644	280,243
Golf	105,300	106,075	106,850	107,625	107,625	107,625
Other	18,893	21,593	21,593	21,593	21,593	21,593
Plan Area Total	**594,823**	**606,858**	**617,299**	**628,337**	**636,859**	**644,610**

- Projected increase in municipal uses (residential, commercial & industrial) of 54,830 AFY or 30% by 2045
- And an overall increase of 49,787 AFY or 8% by 2045
- Some agricultural to urban conversion projected to accommodated urban growth

AFY = acre-feet per year

Actual Water Use(AFY)



AFY = acre-feet per year

- 5-year average water use is below the 2022 projection of approximately 600,000 AFY

Plan Scenarios

No New Projects = Baseline	Existing supplies & facilities, no new projects
Baseline w/Climate Change	Existing supplies & facilities limited by climate change assumptions
Five-Year Plan w/Climate Change	5-year CIP supplies and facilities limited by climate change assumptions
Future Projects w/Climate Change	All planned supplies & facilities limited by climate change assumptions
Expanded Agriculture w/Climate Change	Expanded agricultural demands and all planned supplies & facilities, limited by climate change assumptions

Projects and Management Actions

Water Conservation

1: Urban Water Conservation

2: Golf Water Conservation

3: Agricultural Water Conservation

Water Supply Development

4: Increased Surface Water Diversion

5: Delta Conveyance Facility

6: Lake Perris Seepage

7: Sites Reservoir

8: Future Supplemental Water Acquisitions

9: EVRA Potable Reuse

Source Substitution & Replenishment

10: Mid-Valley Pipeline Direct Customers

11: East Golf Expansion

12: Oasis Distribution System

13: WRP-10 Recycled Water Delivery

14: WRP-10 Tertiary Expansion

15: Canal Water Pump Station Upgrade

16: WRP-7 Recycled Water Delivery

17: WRP-4 Tertiary Expansion & Delivery

18: DWA WRP Recycled Water Delivery

19: PD-GRF Phase 2 Expansion

20: TEL-GRF Expansion

21: WWR-GRF Operation

Water Quality Protection

22: Eliminate Wastewater Percolation

23: Wellhead Treatment

24: Small Water System Consolidations

25: Septic to Sewer Conversions

26: CV-SNMP GW Monitoring Program Workplan

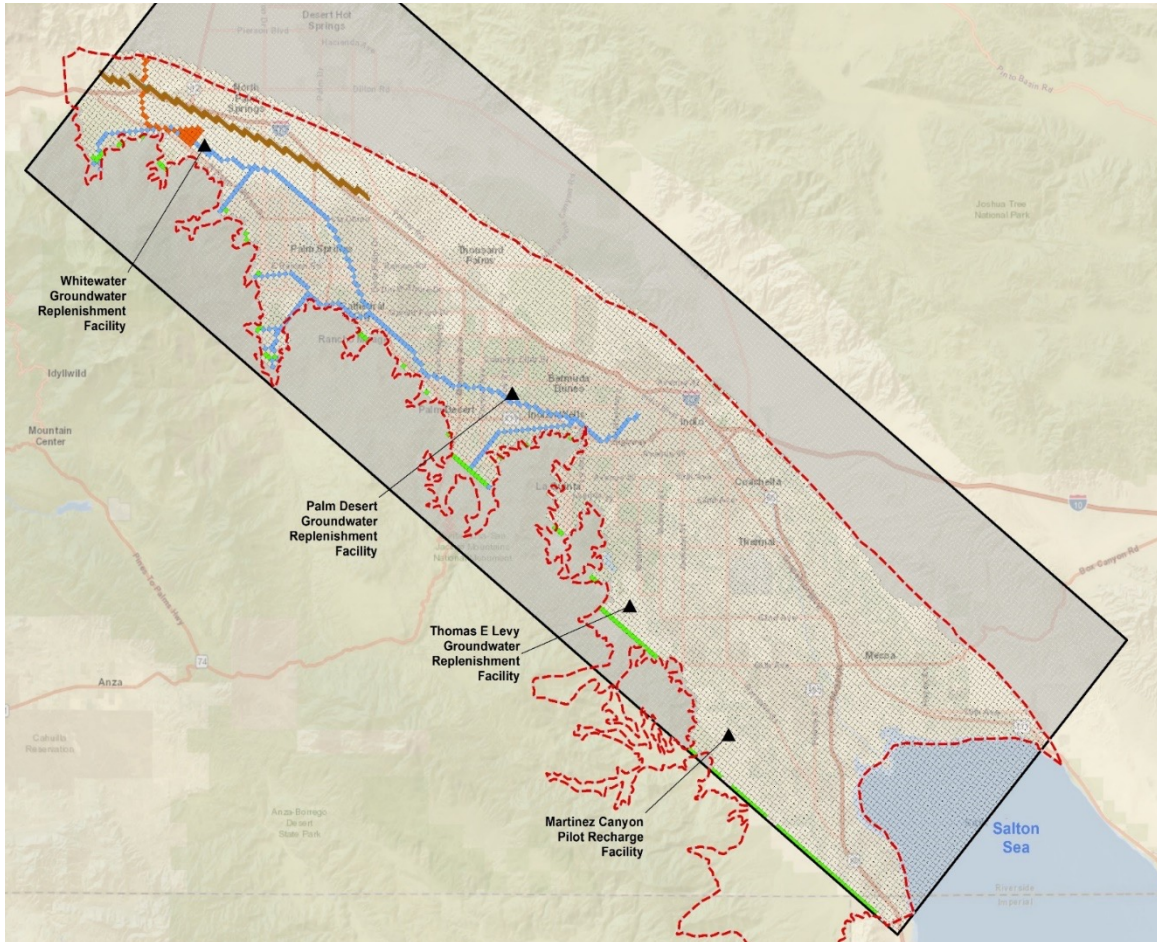
27: CV-SNMP Development Workplan

28: Colorado River Salinity Forum

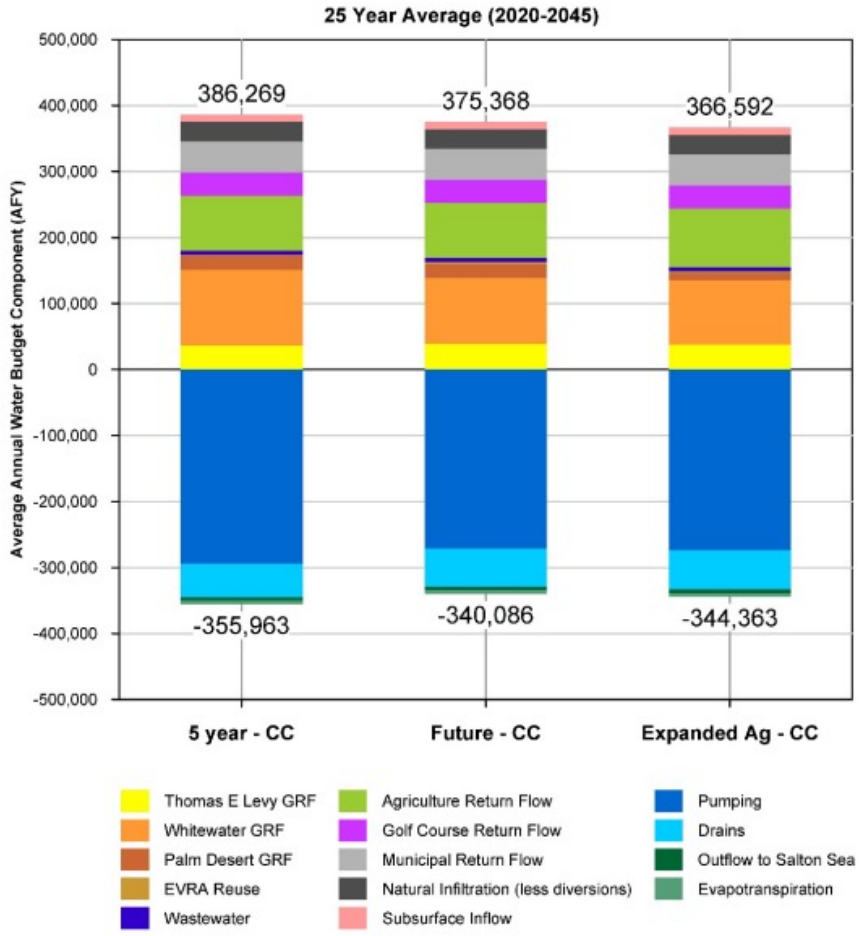
29: Source Water Protection

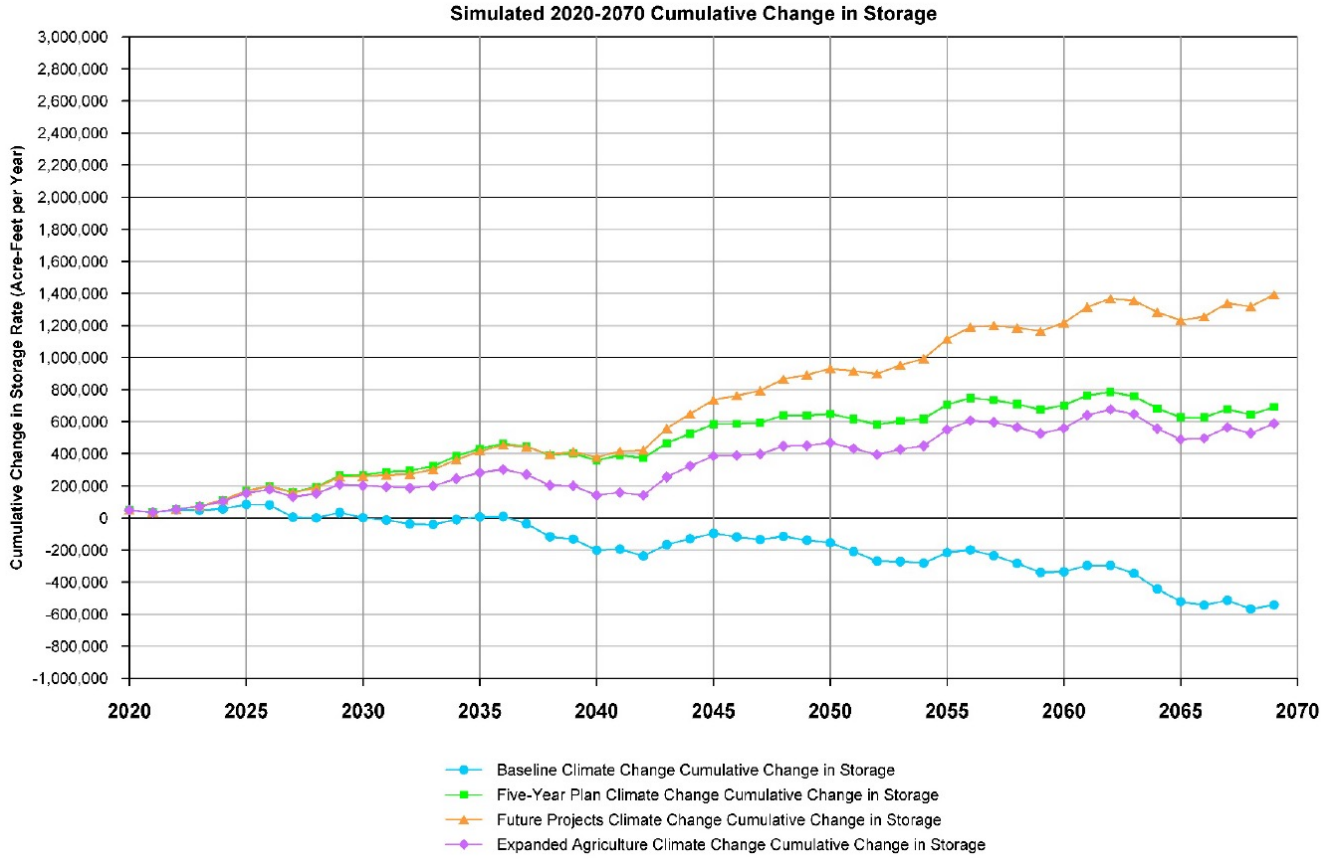
Groundwater Model

- Historical model accurately simulates shallow and deep groundwater levels in all areas of the Subbasin
- Updated through 2019 and used to simulate future water levels and storage changes under different management scenarios
- Useful tool to demonstrate if groundwater can be managed sustainably under different scenarios



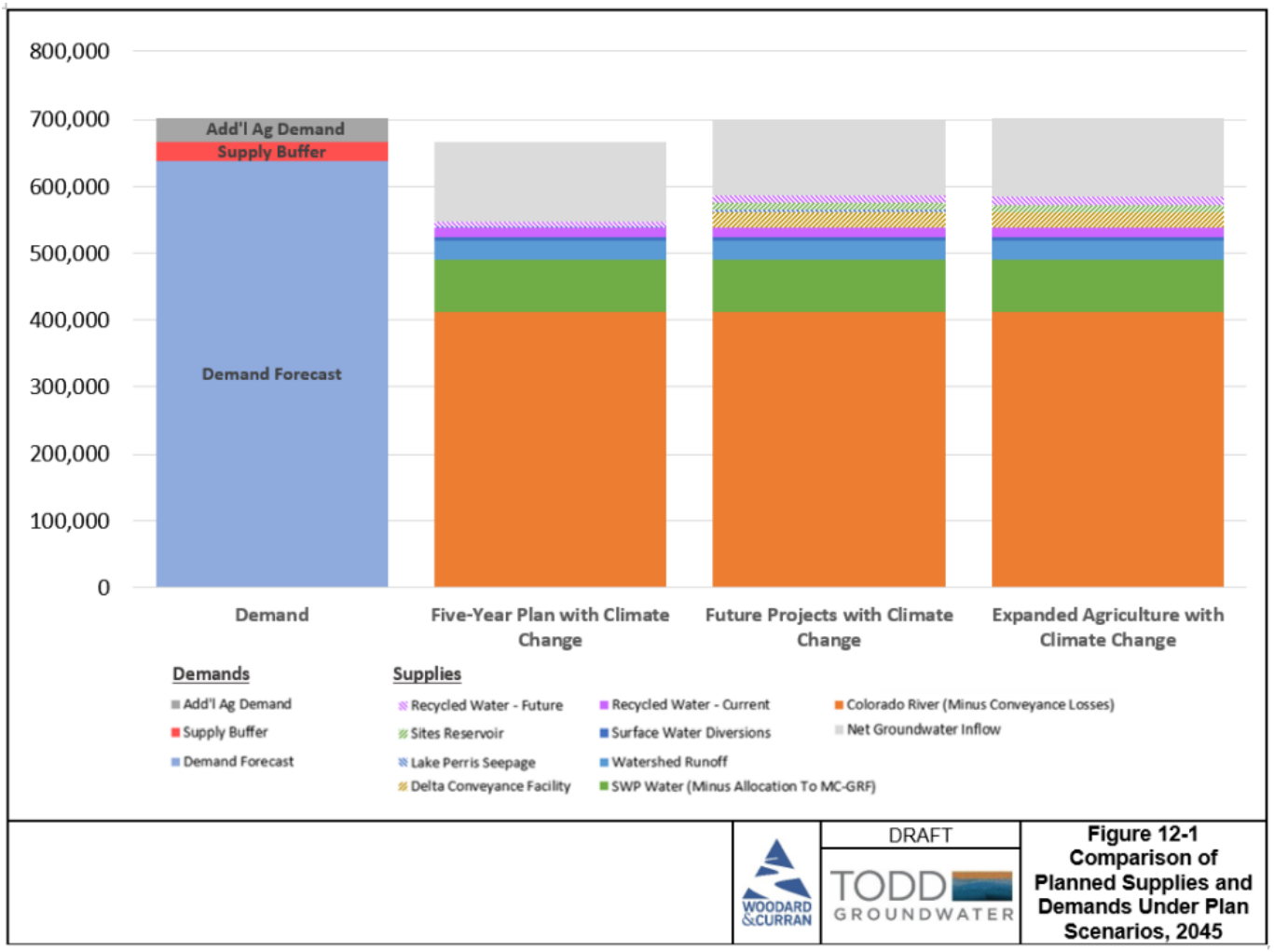
Groundwater Balance and Storage





AFY = acre-feet per year

Comparison of Projected Demands and Supplies Under Plan Scenarios, 2045



Questions?

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Annual Report Workshop
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