2022 Indio Subbasin Water Management Plan Update: SGMA Alternative Plan

Workshop #7
October 20, 2021

WATER DISTRICT

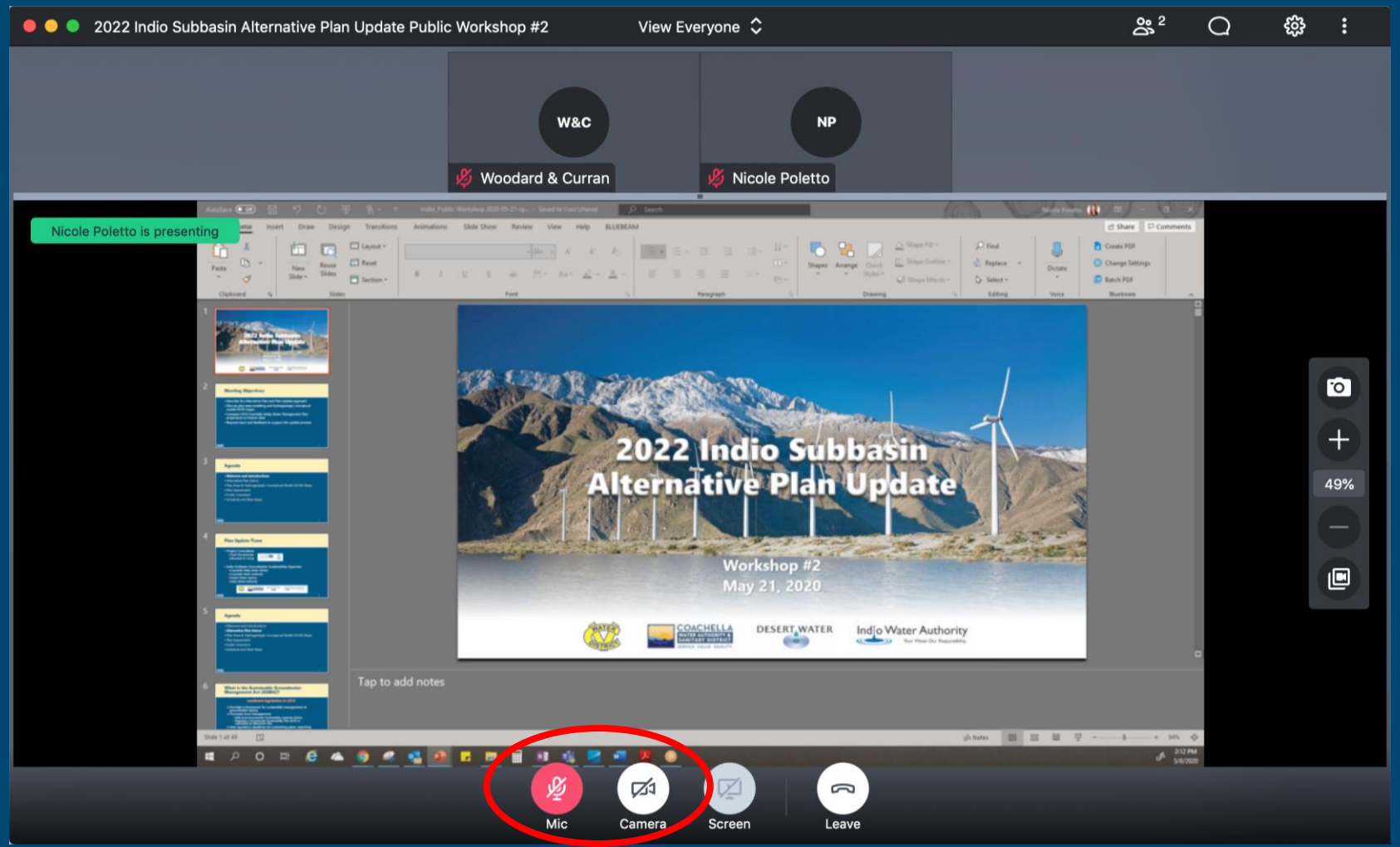
COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

DESERT WATER

Indio Water Authority
Your Water. Our Responsibility.

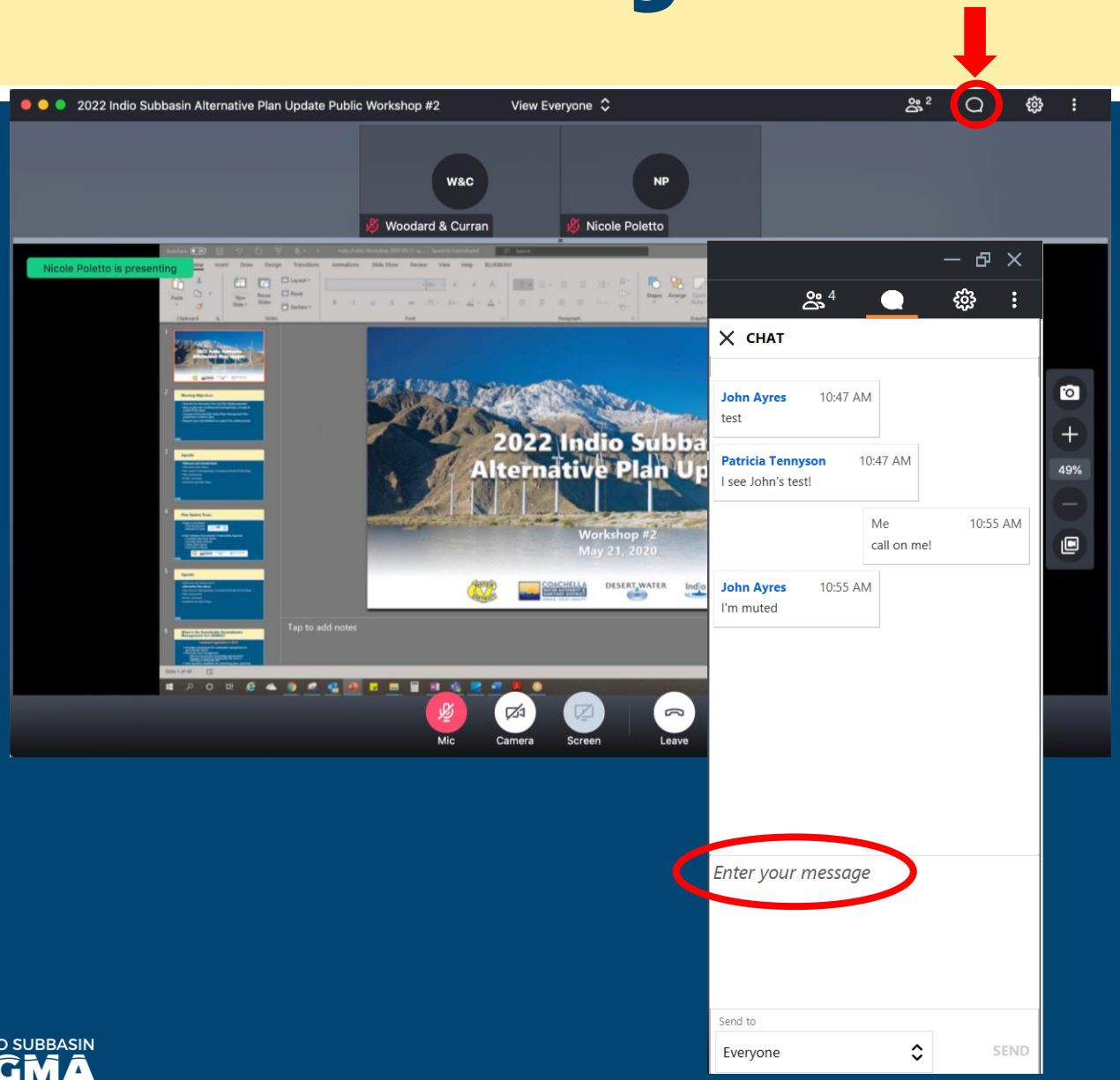
GoToMeeting – Quick How To

- Your screen should look like this:



- Turn on/off your Mic (mute) and Camera (video) using the controls along the bottom
- During the meeting, you may need to wiggle your mouse to make the controls appear
- For Callers: use *6 to unmute on the phone

GoToMeeting – How to Ask a Question



- Our organizer will mute everyone at the beginning of the meeting
- Let us know you have a question by clicking the **Chat** icon in the top right
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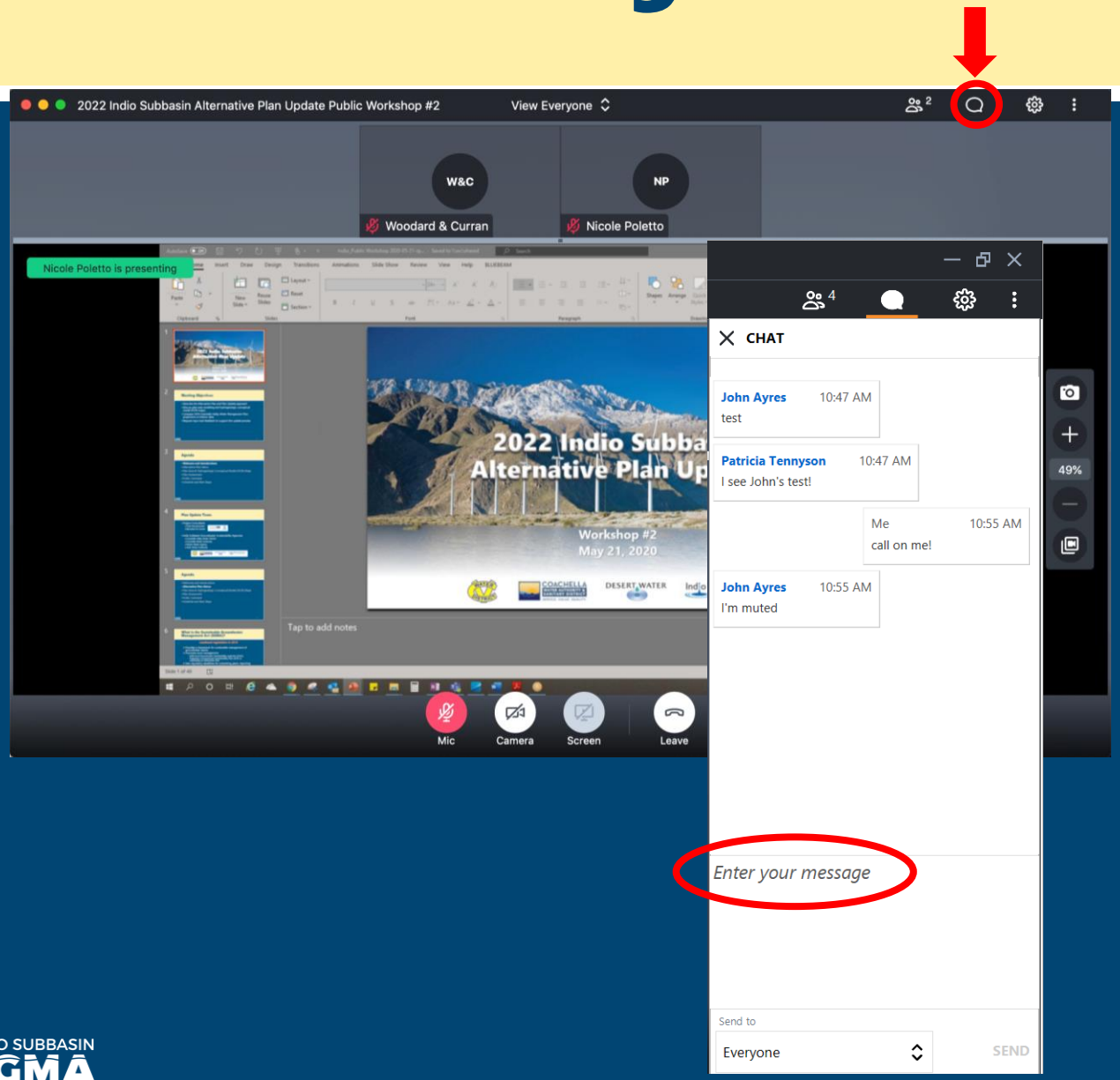

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Agenda

- **Welcome and Introductions**
- 2022 Water Management Plan Update (Alternative Plan Update)
- Groundwater Conditions and Sustainable Management
- Water Demands and Supplies
- Numerical Model, Plan Scenarios, and Projects & Management Actions (PMAs)
- Plan Evaluation and Implementation
- Public Comment
- Get Involved

Plan Update Team

- Project Consultants
  - Todd Groundwater
  - Woodard & Curran

- Indio Subbasin Groundwater Sustainability Agencies
  - Coachella Valley Water District
  - Coachella Water Authority
  - Desert Water Agency
  - Indio Water Authority

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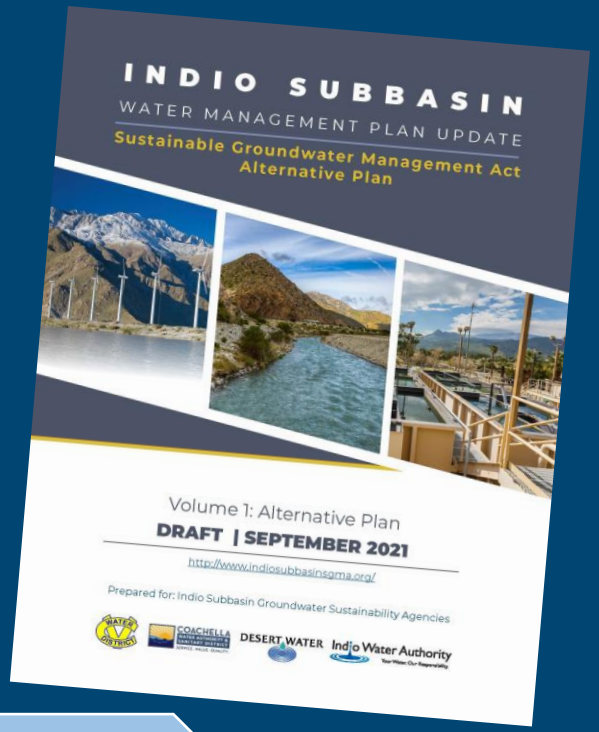
Introducing the 2022 Alternative Plan Update

- Builds on *2010 Coachella Valley Water Management Plan Update* submitted in 2016 and approved by DWR as an "Alternative Plan" to a Groundwater Sustainability Plan
- Five-Year updates are required by Sustainable Groundwater Management Act (SGMA)
- This is the first Five-Year Update



2017	2022	2027	2032	2037
Alternative Plan submitted Dec 2016	Plan Update to be submitted Dec 2021	Plan Update to be submitted Dec 2026	Plan Update to be submitted Dec 2031	Plan Update to be submitted Dec 2036	Ongoing Subbasin sustainability

How Did We Engage People?

- 7 Public Workshops
- 7 SGMA Tribal Workgroups
- Website with Monthly Updates
- Regular Email Announcements and Updates

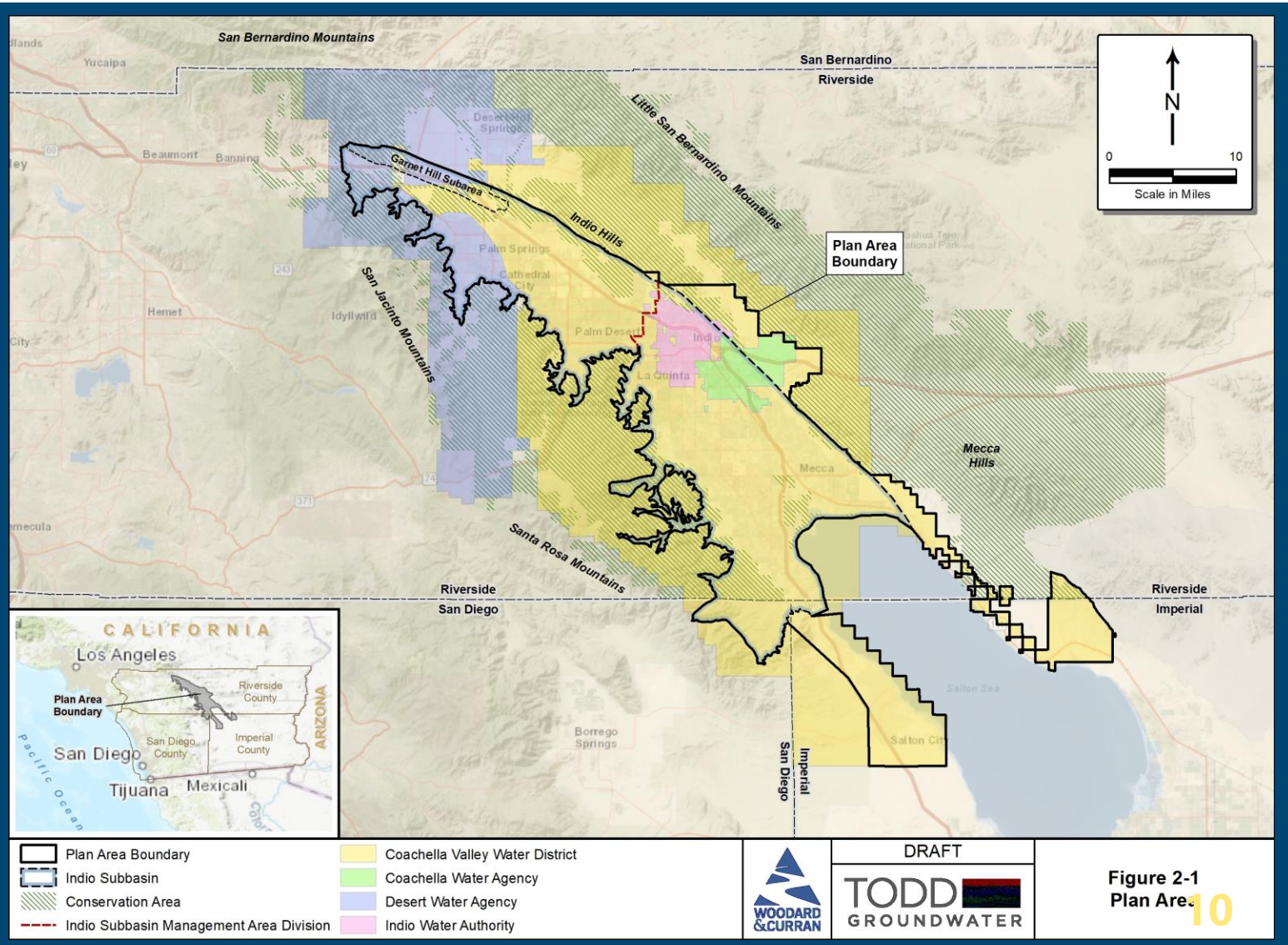
Workshop #1

Plan Area and Groundwater Sustainability Agencies (GSAs)

The Plan Area is the Indio Subbasin and areas that are-or are likely to be-supplied groundwater from the Subbasin

The GSAs are:

- CVWD
- CWA
- DWA
- IWA

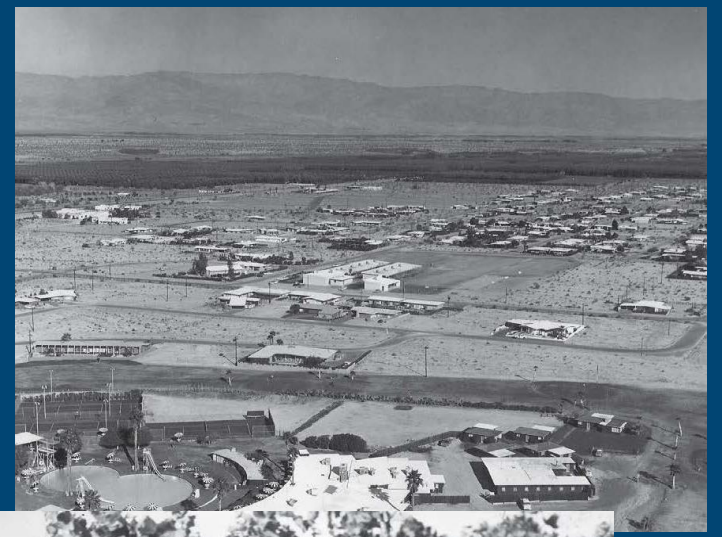


Plan Update Builds on a Long History of Active Local Water Management

- The history of Coachella Valley is one of agricultural and urban growth, accompanied by increasing water demand and periods of groundwater overdraft

"The existing underground water supply of the District has shown rapid depletion during the past year. The urgency of completion of a supplemental water supply is now apparent to practically all of our land owners."

Excerpt from 1945 Annual Report, CVCWD



Multiple Water Sources have been Developed to Ensure a Reliable Supply

- Capture and recharge of Whitewater River stormflows began in 1918
- Coachella Canal completed in 1949
  - Bringing Colorado River water to support agriculture in East Valley
- CVWD and DWA contracts for State Water Project (SWP) water in 1963
  - SWP exchanged for Colorado River Water via Colorado River Aqueduct
  - Recharge at Whitewater River Groundwater Replenishment Facility (GRF) begins in 1973
- Water recycling began in 1965


Coachella Canal construction


Whitewater River GRF

A Combination of Management Actions are Essential to Meeting Local Water Demands

- Local stormwater and imported water for direct replenishment of groundwater
- Source substitution provides non-potable water for irrigation, reducing groundwater pumping
- Agricultural, golf, and urban conservation reduces water demand

Plan Update – Goal and Objectives

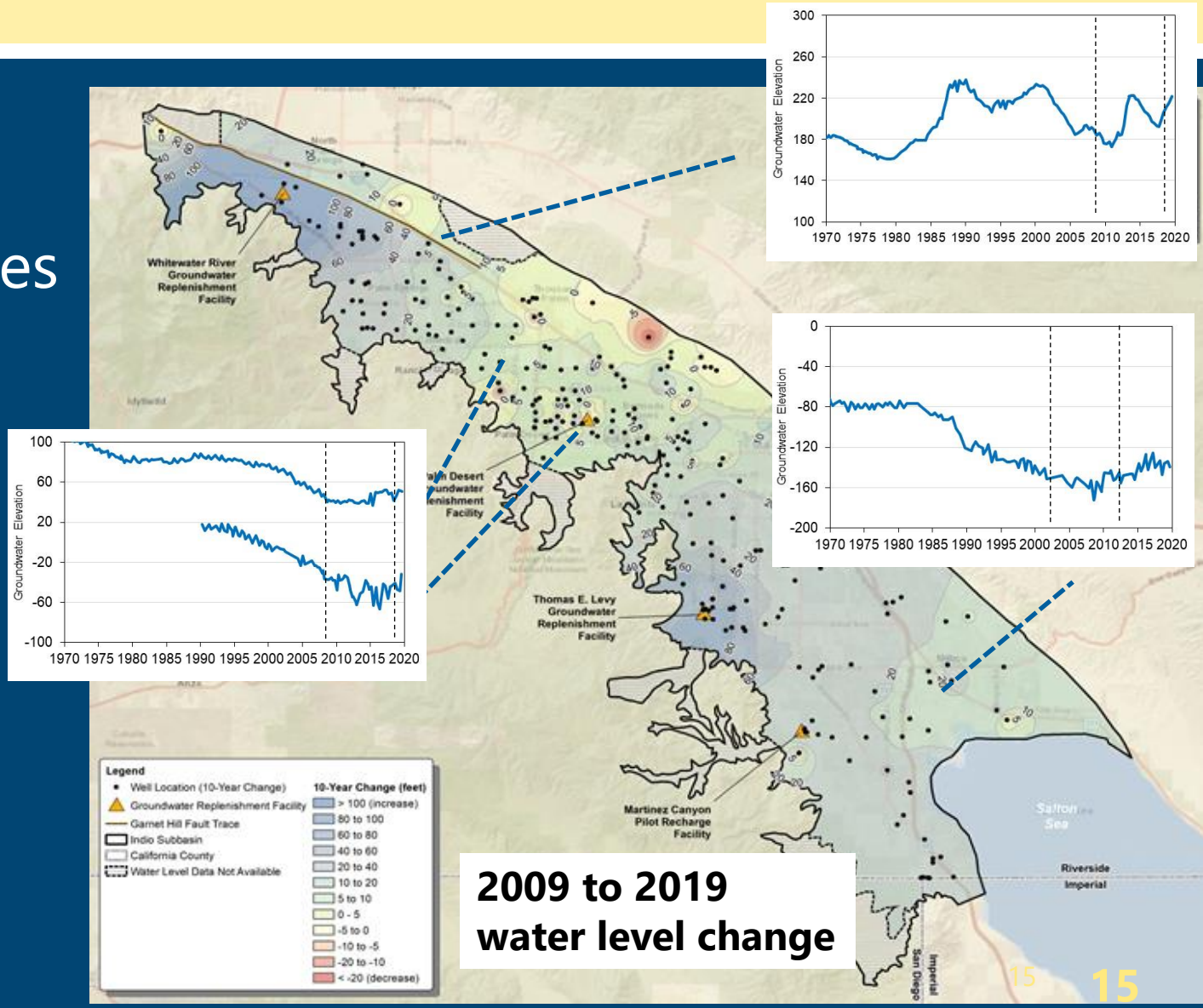
Plan Goal: *To reliably meet current and future water demands in a cost-effective and sustainable manner.*

Plan Objectives:

1. Meet current and future municipal water demands with 10 percent supply buffer
2. Avoid chronic groundwater overdraft
3. Manage and protect water quality
4. Collaborate with tribes, state and federal agencies on shared objectives
5. Manage future costs
6. Minimize adverse environmental impacts
7. Reduce vulnerability to climate change and drought impacts

How is the Water Management Plan Working?

- Plan implementation has resulted in significant groundwater storage increases across the Indio Subbasin
- Over the last 10 years, groundwater levels have increased regionally
- More work is planned or underway to ensure sustainable management consistent with SGMA

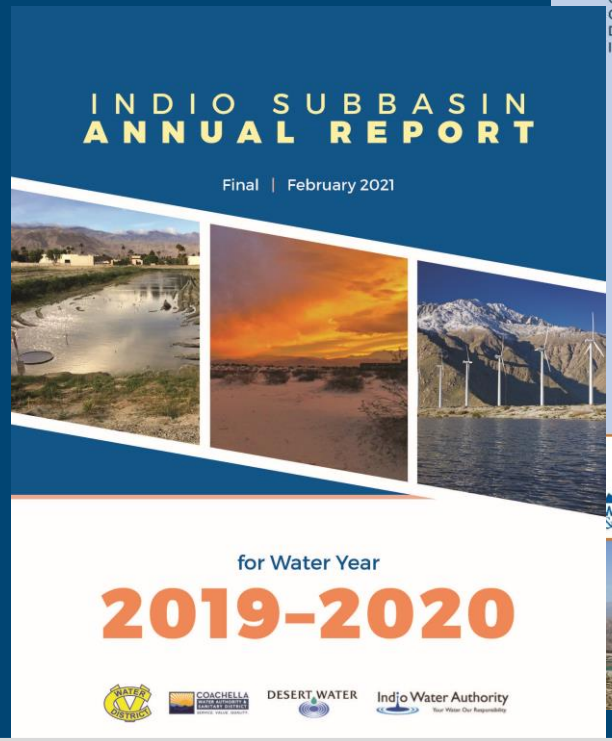


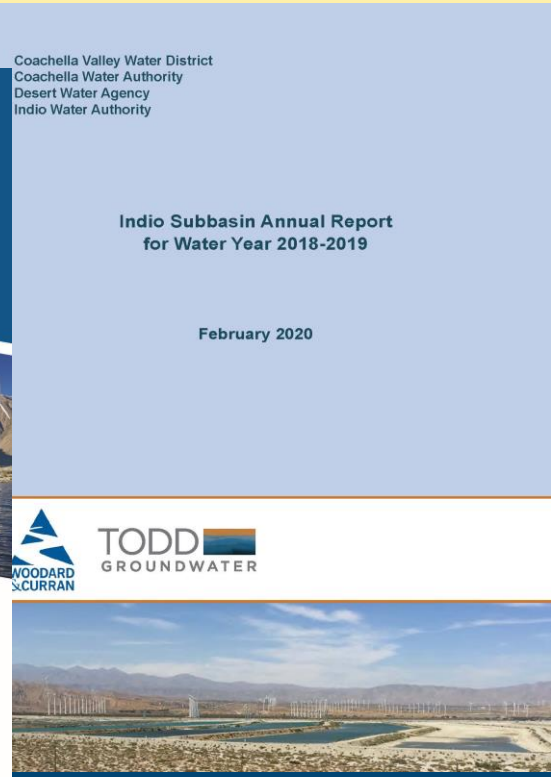
INDIO SUBBASIN SGMA

How Do We Know?

Ongoing monitoring, data analysis, reporting, and outreach:

- Annual Reports
  - Groundwater elevations
  - Groundwater pumping
  - Water use and demand
  - Water budget
  - Summary of progress
- Five-Year Updates
- Website





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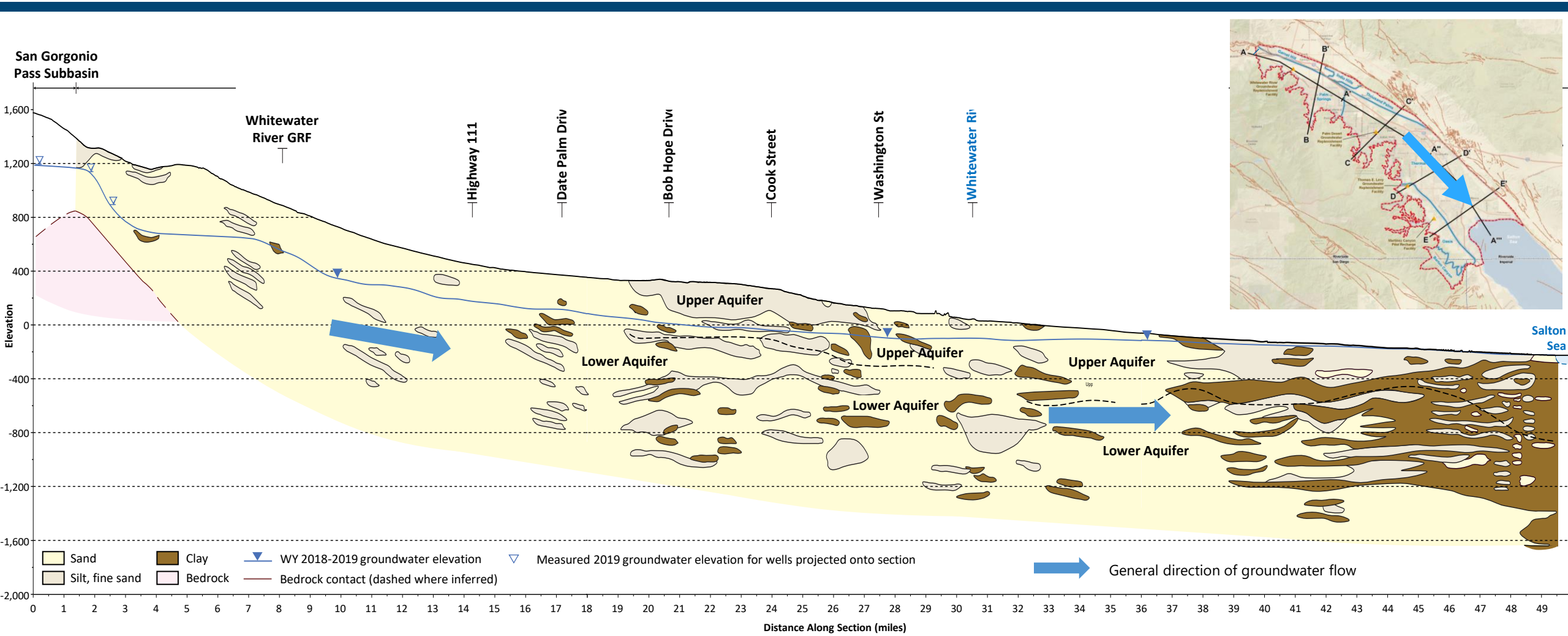
Plan Update describes the Indio Subbasin and How Groundwater Flows through It



All Six Potential *Undesirable Results* are Addressed for Indio Subbasin


Chronic lowering of groundwater levels


Reduction of groundwater storage


Land subsidence


Degraded water quality


Seawater intrusion


Depletions of connected surface water with impacts on beneficial uses including Groundwater Dependent Ecosystems (GDEs)

Identifying Undesirable Results and Minimum Thresholds for Groundwater Levels

What *undesirable results* do we want to avoid?

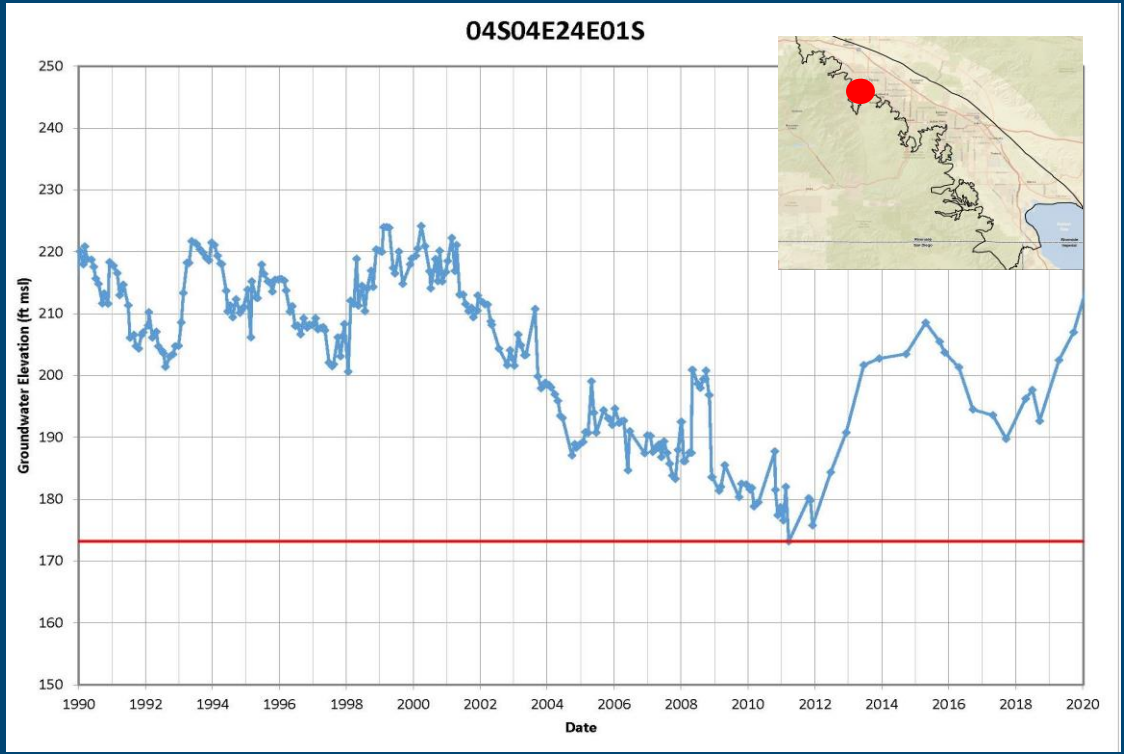
- Significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses
- Impacts to relatively shallow wells, including small water system and private drinking water supply wells

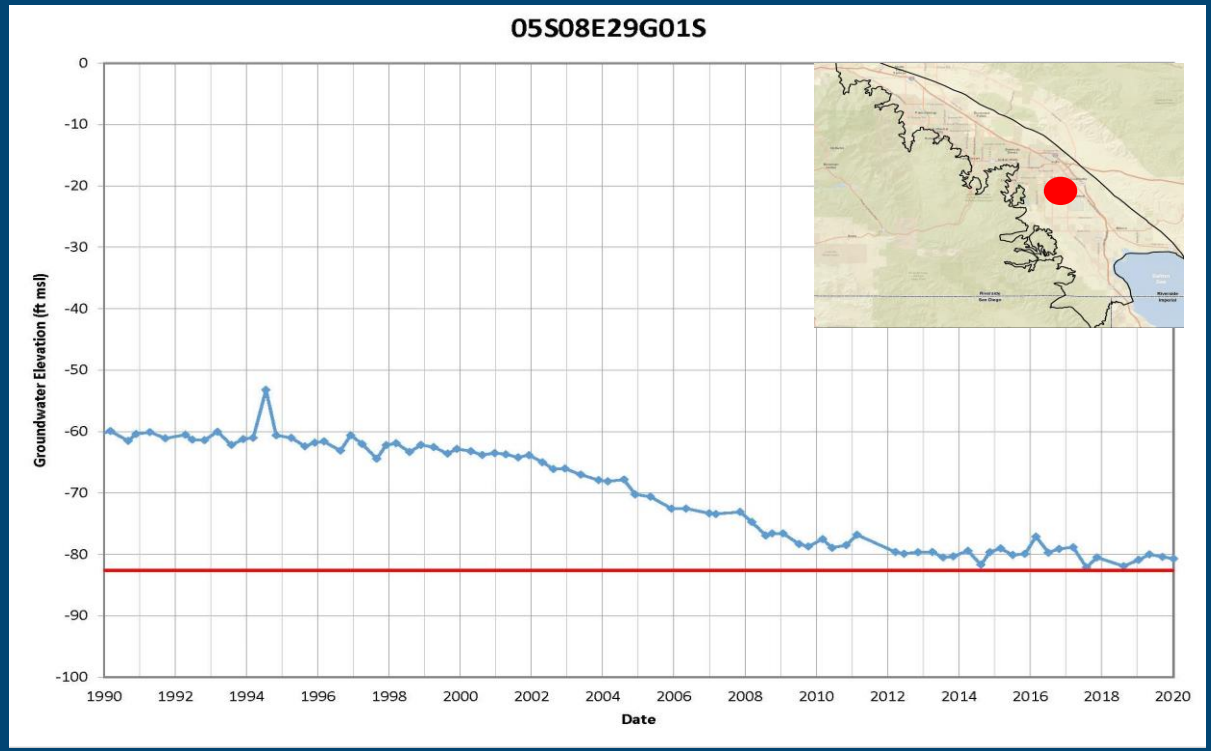
How are Minimum Thresholds (MT) defined?

- MT is a numeric value used to define undesirable results
- Defined here as the historical low groundwater level at a key well

MTs as Historical Lows Measured at Key Wells

- Historical lows occurred in about 2009 with no reported shortages
- MTs compared favorably with well depths in small water system wells

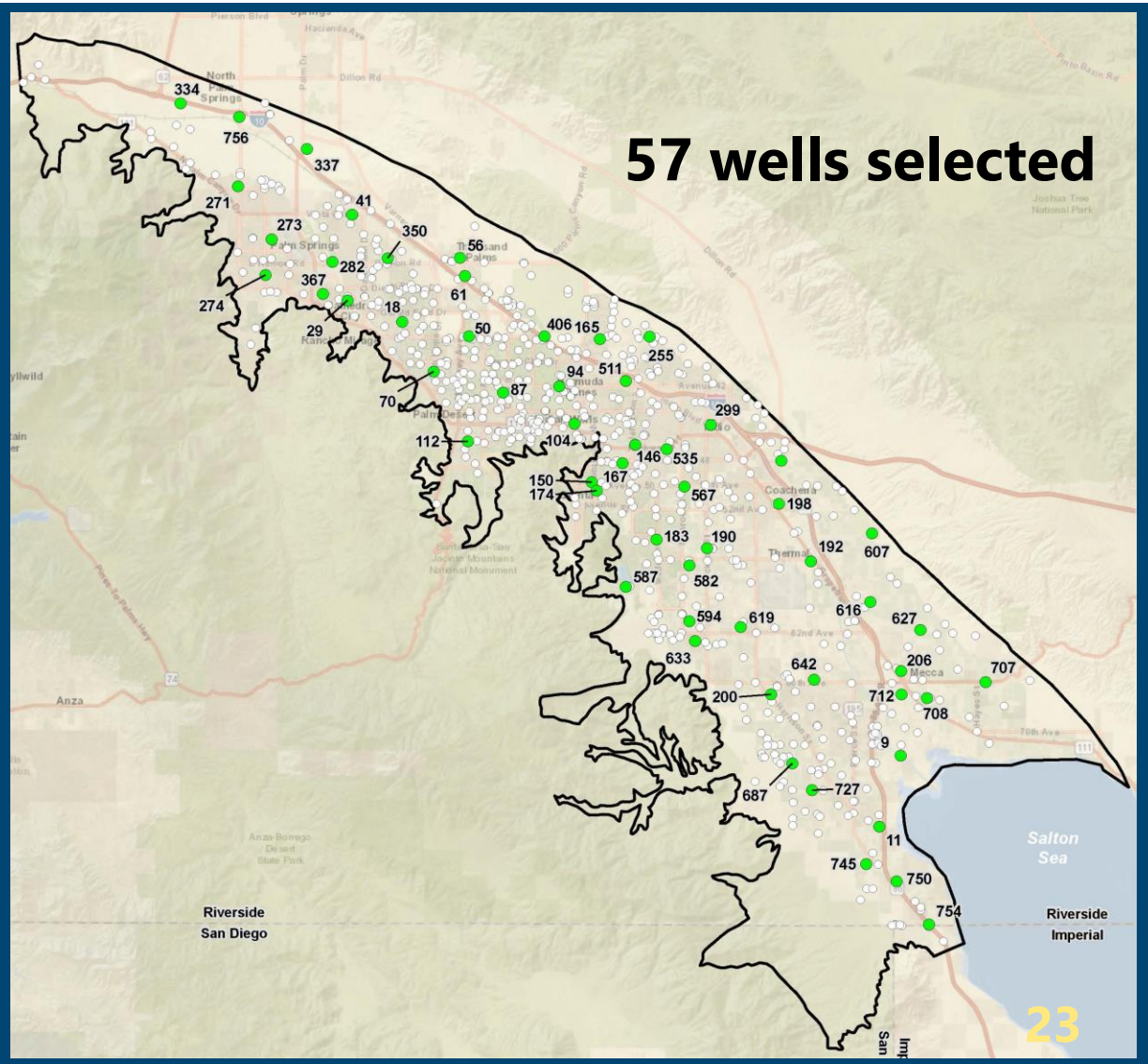




Groundwater Level MTs are set at Key Wells

Key Well selection factors include:

- Well construction data available
- Current monitoring
- Long, reliable record
- Areal distribution
- Location among production wells
- Proximity to small water systems
- All GSAs represented

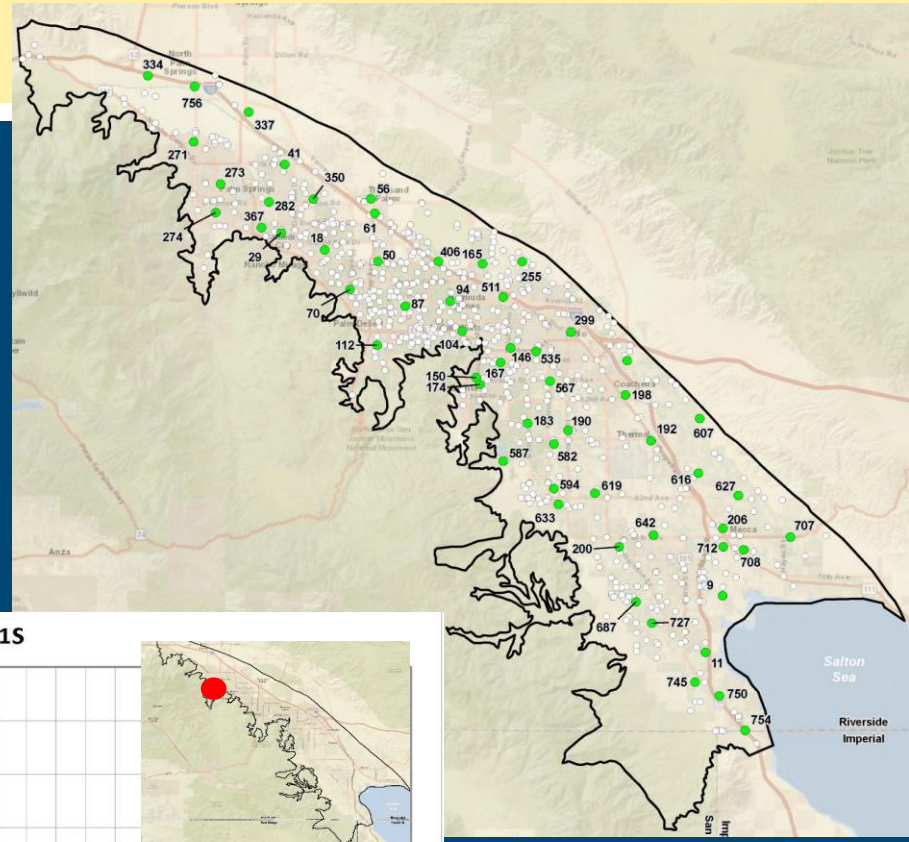


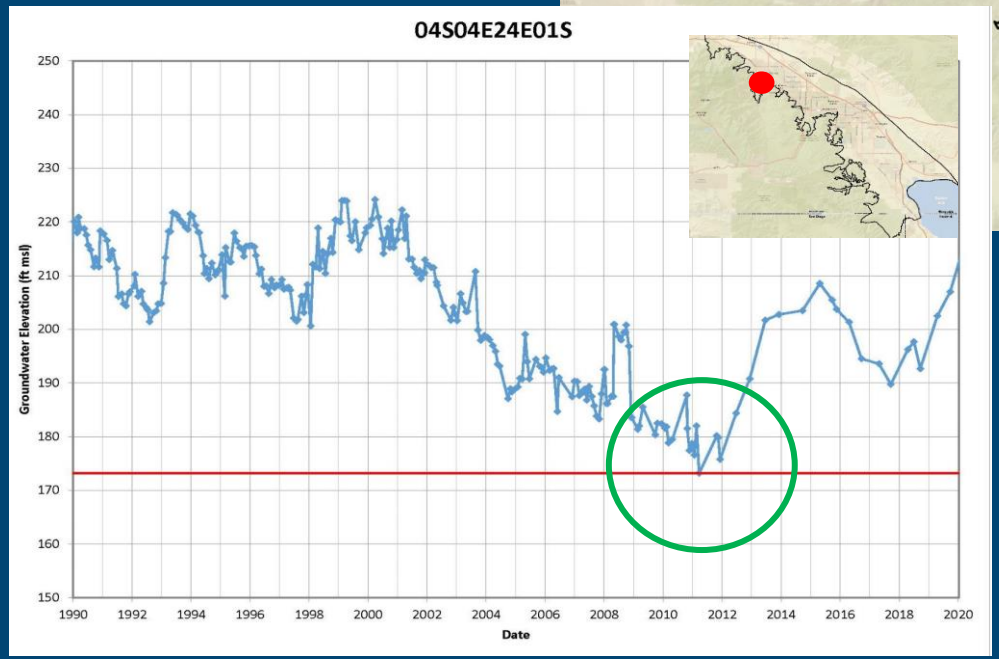
MTs for Groundwater Levels

Historical lows as measured at Key Wells:

An undesirable result occurs when the MT is crossed in five consecutive low-season monitoring events in 25% of wells across the subbasin

GSAs will monitor levels, respond as needed, and provide annual reporting





Groundwater Level MTs are Suitable Proxies for Groundwater Storage and for Subsidence

Groundwater levels, storage, and subsidence are correlated.

The groundwater level MTs are defined to avoid undesirable results of significant & unreasonable:

Loss of yield from existing production wells due to chronic level decline

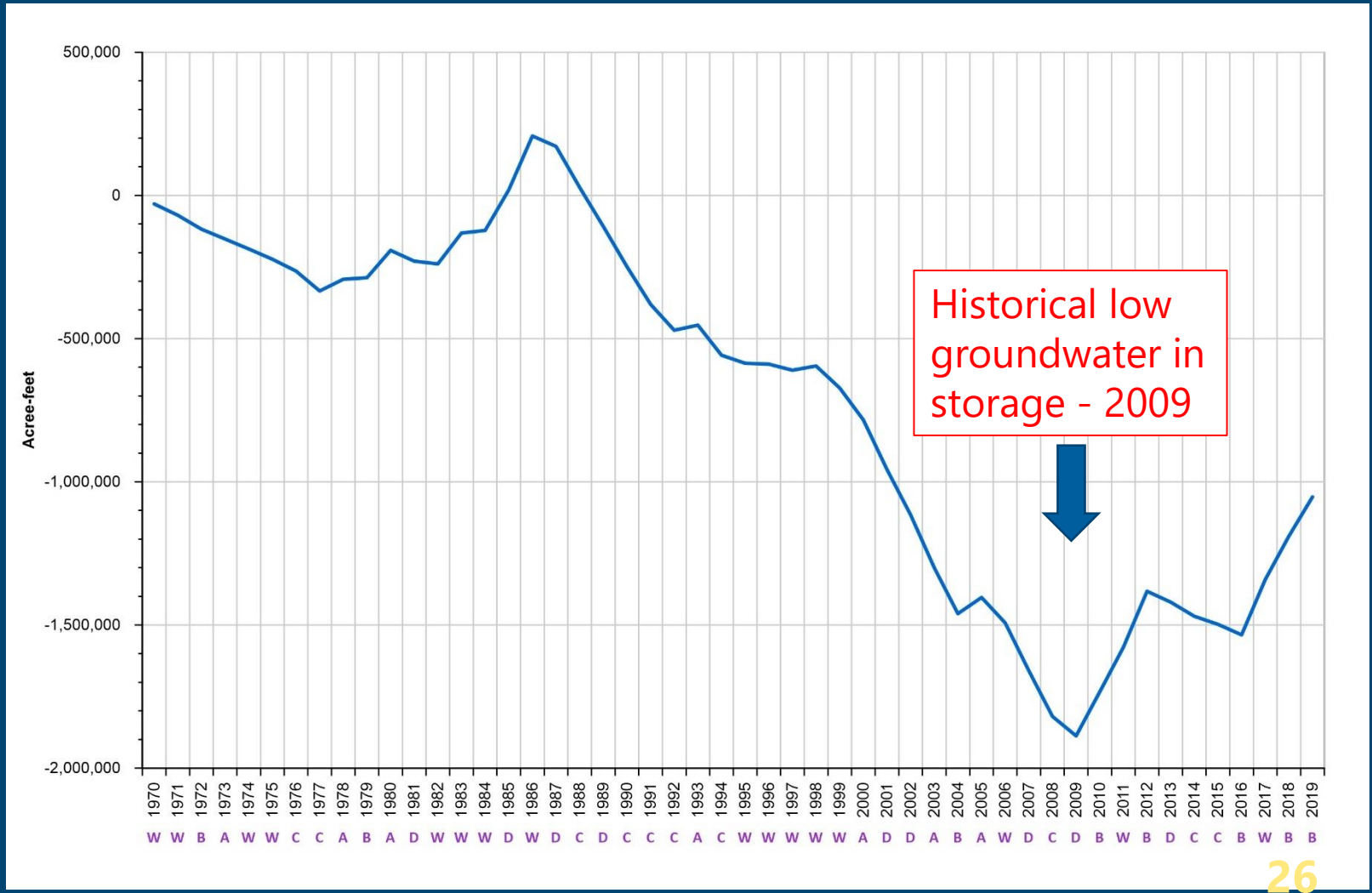
Reduction of groundwater storage

Reduction in the viability of water conveyance, flood control and other infrastructure due to land subsidence

Change in Groundwater Storage

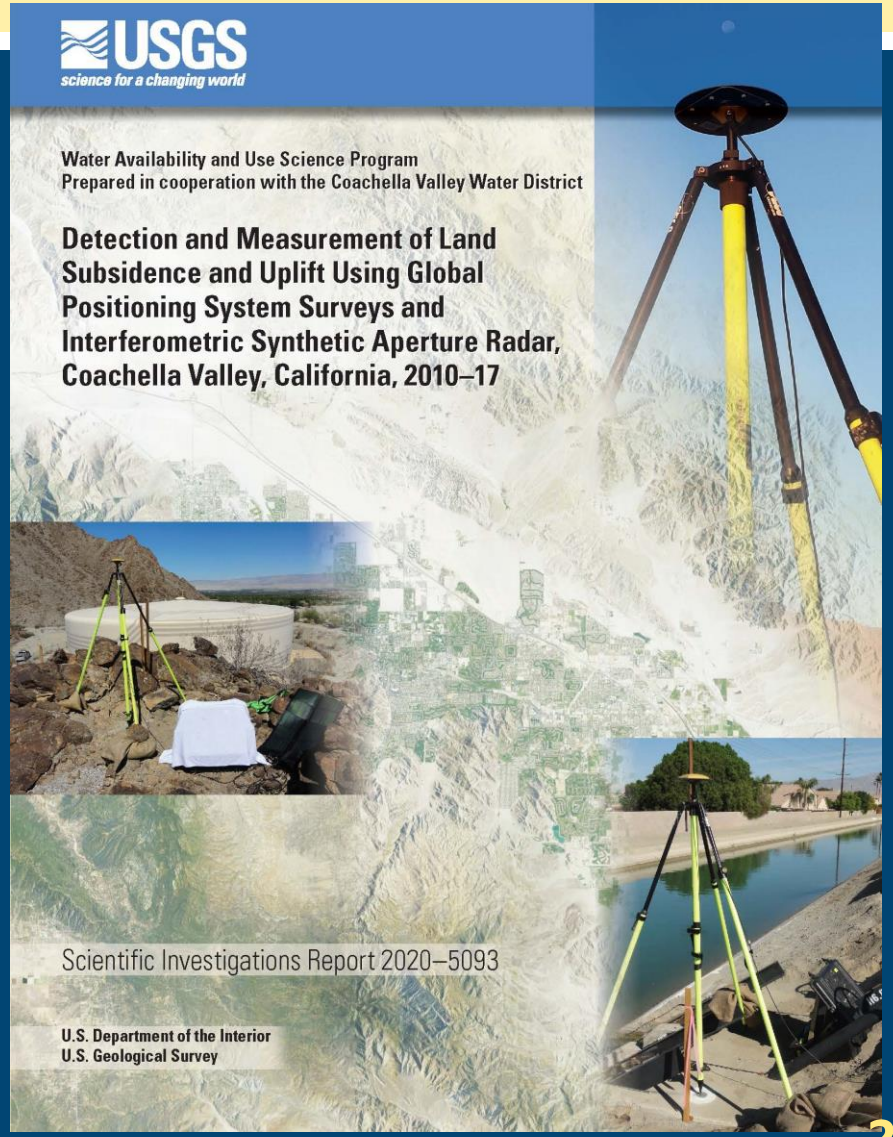
The "running total" from 1970 to 2019

- Shows overdraft from 1987-2009
- Reversal of historical overdraft since 2009
- An increase of about 840,000 AF stored water for use if/when shortages occur, e.g., statewide drought



Land Subsidence

- Indio Subbasin is susceptible to subsidence due to compaction of basin sediments with groundwater level declines
- Subsidence as much as 2 feet, 1995 to 2010, correlated to groundwater declines due to pumping
- Stabilization and uplift documented since 2010 with higher groundwater levels



Groundwater Conditions: Water Quality

- Numerous water quality constituents are being tracked by GSAs
- Water from large water systems meets all drinking water standards
- Small water systems and domestic wells may be affected by some constituents
  - Nitrate (multiple sources)
  - Naturally occurring Cr-6
  - Naturally occurring Arsenic
- GSAs are working with community representatives and non-profits on domestic system consolidations

Groundwater Conditions: Water Quality

Plan Update provides comprehensive assessment of groundwater quality

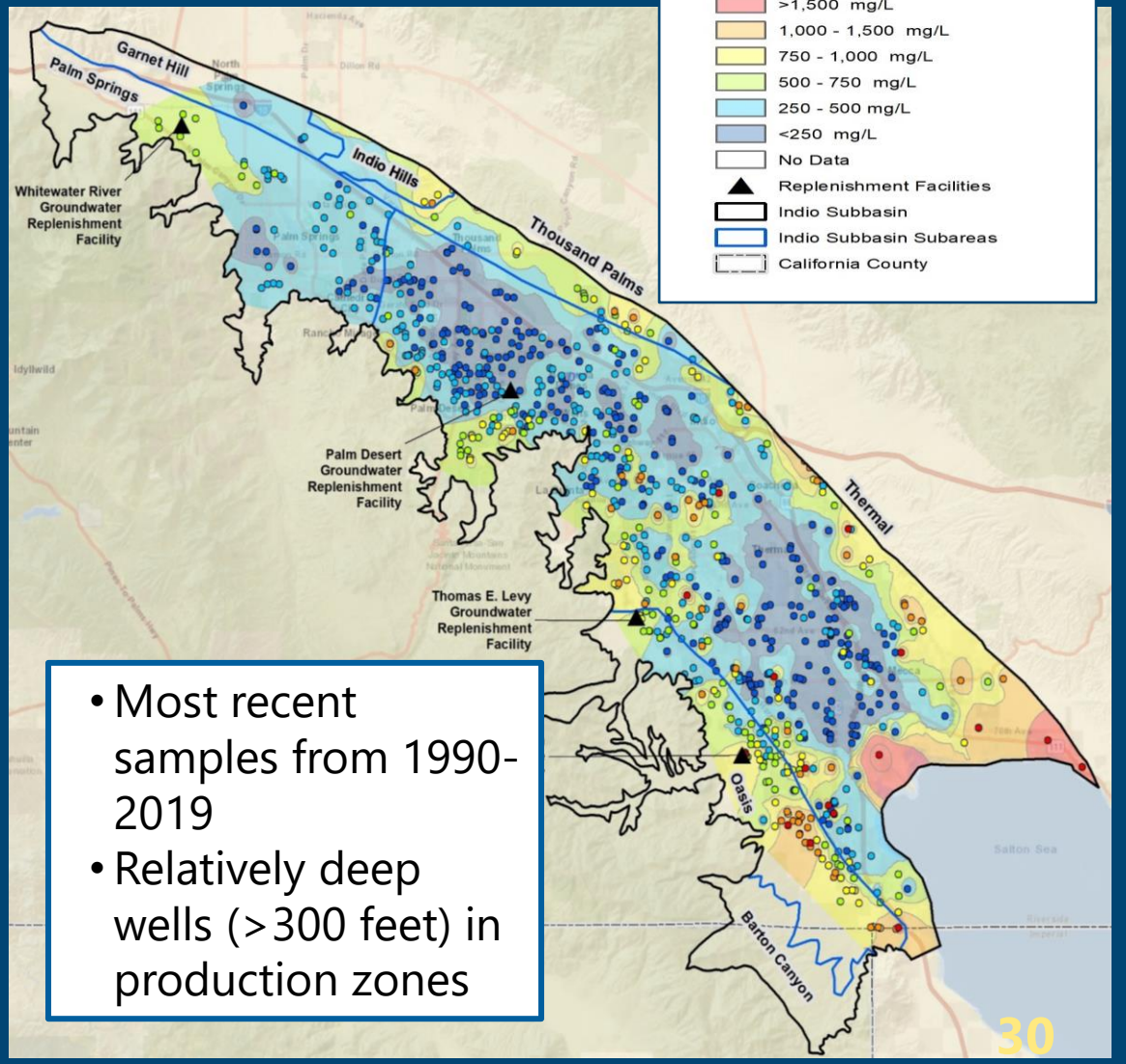
- Maps for eight constituents
- Cross-sections for TDS, NO3, Arsenic, Cr-6 to show vertical variation
- Time concentration plots for TDS and nitrate
- Discussion of significance, source(s), distribution factors

Constituents of Concern Included

- Salinity (TDS)
- Nitrate
- Arsenic
- Hexavalent chromium (Cr-6)
- Fluoride
- Perchlorate
- Uranium
- DBCP

Groundwater Quality Maps: e.g., TDS

- SWRCB Consumer Acceptance Levels
  - recommended 500 mg/L
  - upper 1,000 mg/L
  - short-term 1,500 mg/L
- From natural sources, return flows, imported water recharge, septic and wastewater disposal, subsurface inflow, and historical seawater inflow
- Large areas are <500 mg/L with highest concentrations near Salton Sea and along basin margins



- Most recent samples from 1990-2019
- Relatively deep wells (>300 feet) in production zones

Salinity Studies/SNMP

Plan Update has provided:

- Improved basis to study the rate and level of increased salt in groundwater from all sources (e.g., return flows, recharge, wastewater, subsurface inflow, seawater intrusion)
- Groundwater quality database compilation and assessment
- Planning for installation of additional monitoring wells
- Update and improvement of numerical flow model that can be basis for salt and nutrient balance studies
- Planning for study of relationships among groundwater levels, groundwater quality, and drain flows
- Coordination with the CV-SNMP update beginning in 2022

Seawater Intrusion and the Salton Sea

The Salton Sea is distinguished by:

- salinity about twice that of the ocean and gradually increasing
- surface water levels decreasing and a shoreline that is retreating

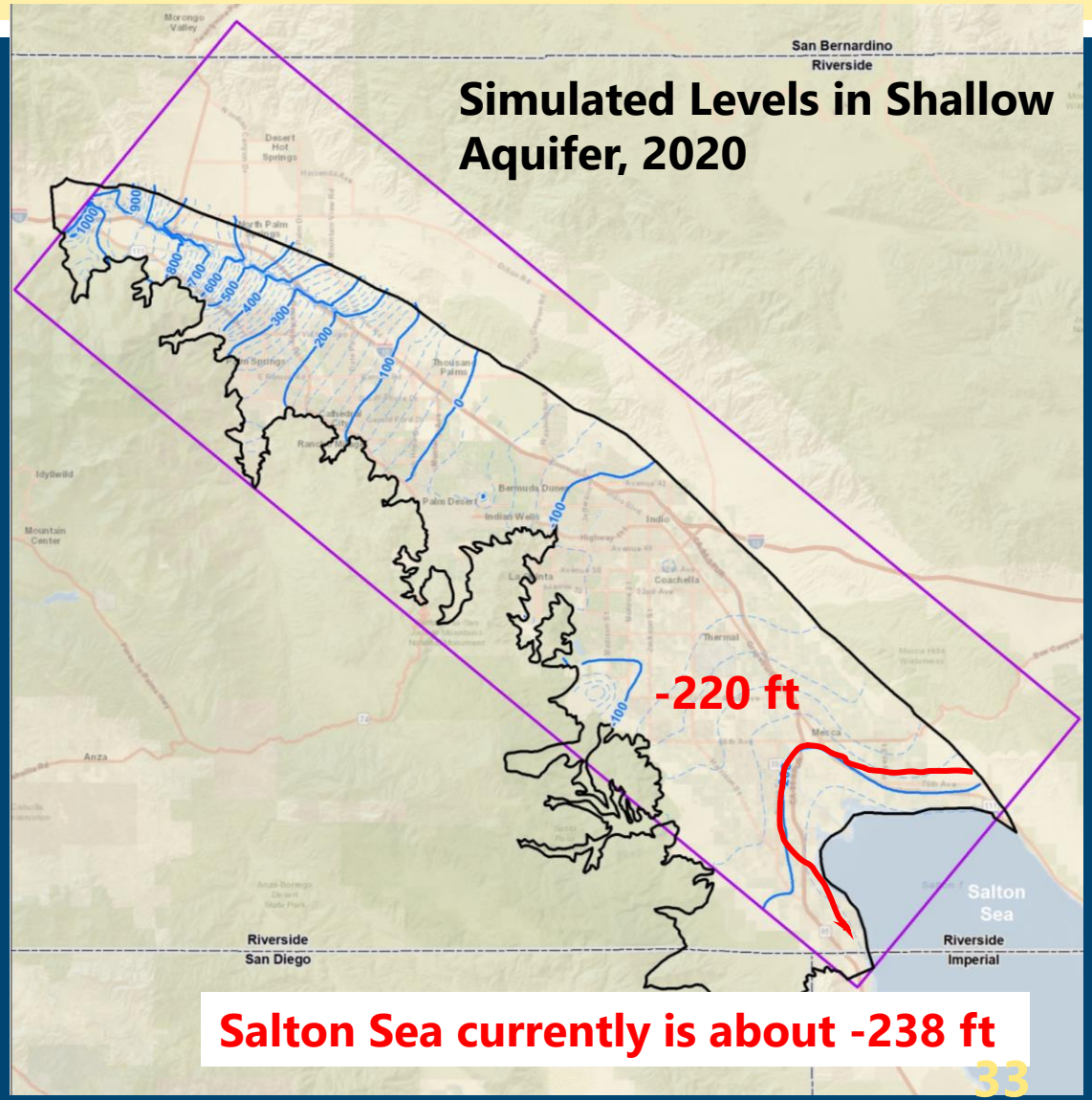
Seawater intrusion is an important consequence of overdraft

Tracked closely by the GSAs:

- Dedicated monitoring wells for sampling and level measurements
- Subbasin groundwater level monitoring and water budget modeling to assess groundwater flow

Seawater Intrusion

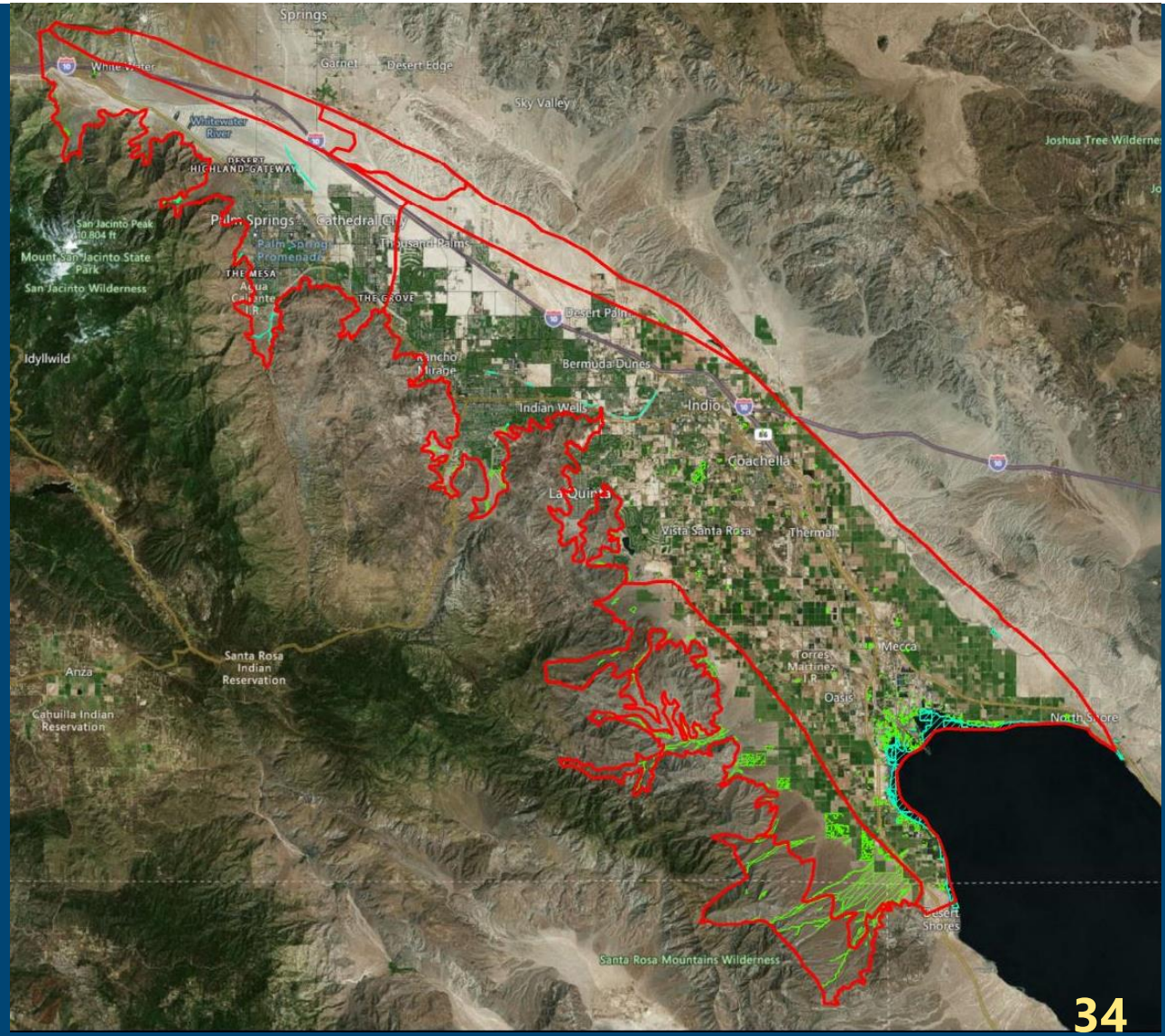
- Numerical modeling indicates:
  - Net inflow from Sea 1997-2014
  - Net outflow to Sea, 3,000 AFY, 2015 on
- Simulated 2020 shallow groundwater levels (-220 feet) are higher than Sea
- Simulated 2020 deep groundwater contour (-200 feet) is even higher (groundwater flowing upward)
- Seawater intrusion has been reversed (but will continue to be monitored)



Interconnected Surface Water and Groundwater Dependent Ecosystems (GDEs)

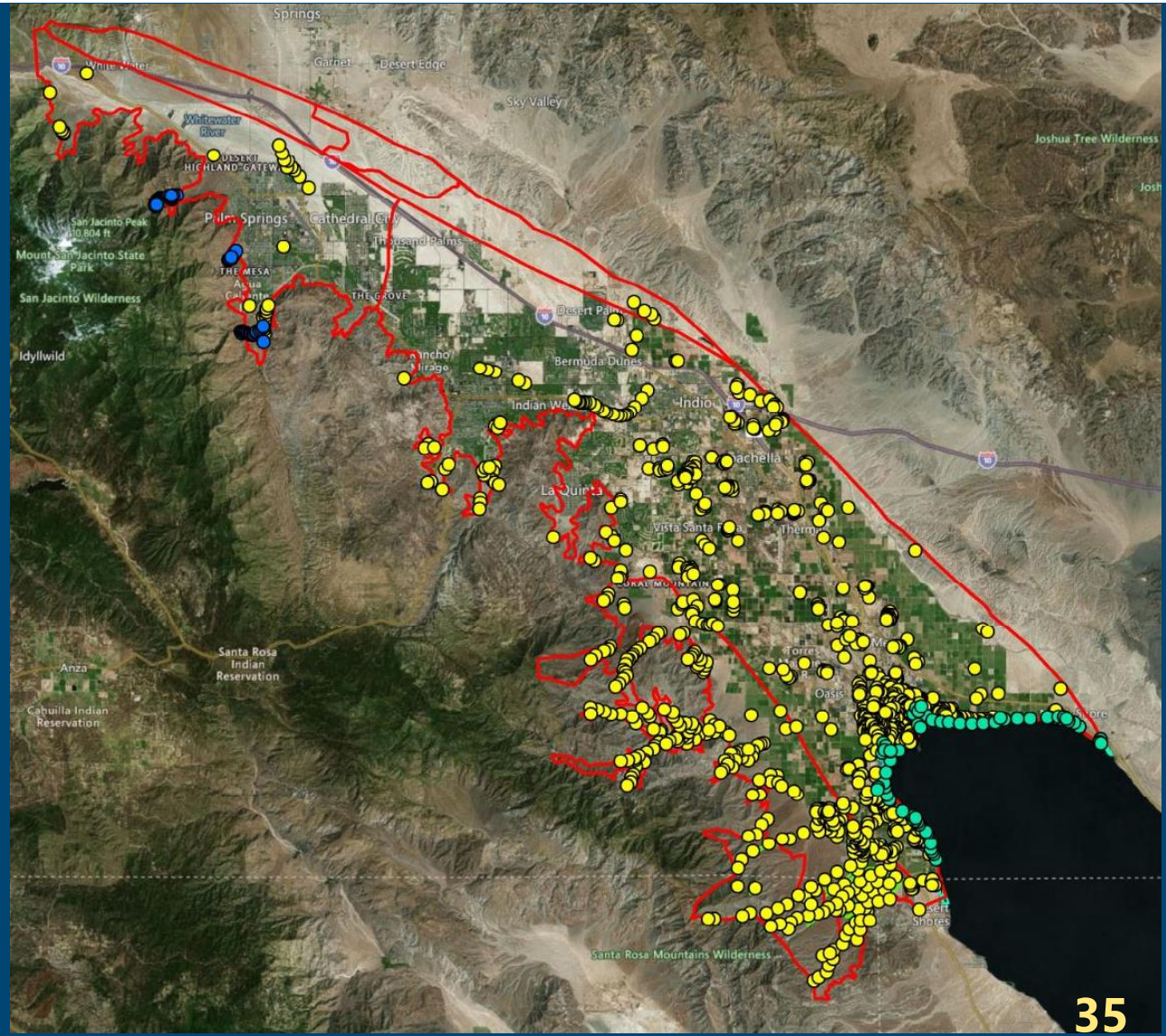
Plan Update assesses potential GDEs:

- Review of Coachella Valley Multiple Species Habitat Conservation Plan and protected species
- Desktop analysis of mapped NCCAG polygons
- Field survey of 13 sites
- Mapping of potential GDEs



Assessment and Mapping of Potential GDEs

- Probable GDEs (5%) occur in canyons and may rely partially on surface water or snowmelt
- Probable Non-GDEs (89%) include agricultural fields and drainages, uplands, and dry washes
- Playa Wetlands (6%) are dependent on agricultural drain flows and occur along Salton Sea exposed seabed



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Demand Forecast – 2020-2045

- Forecast is based on 11 geographic units
- Considers:
  - Projected land uses
  - Conversion of agricultural lands
  - Historical water use
  - Conservation trends
- Coordination and data sharing with Mission Creek Planning Team

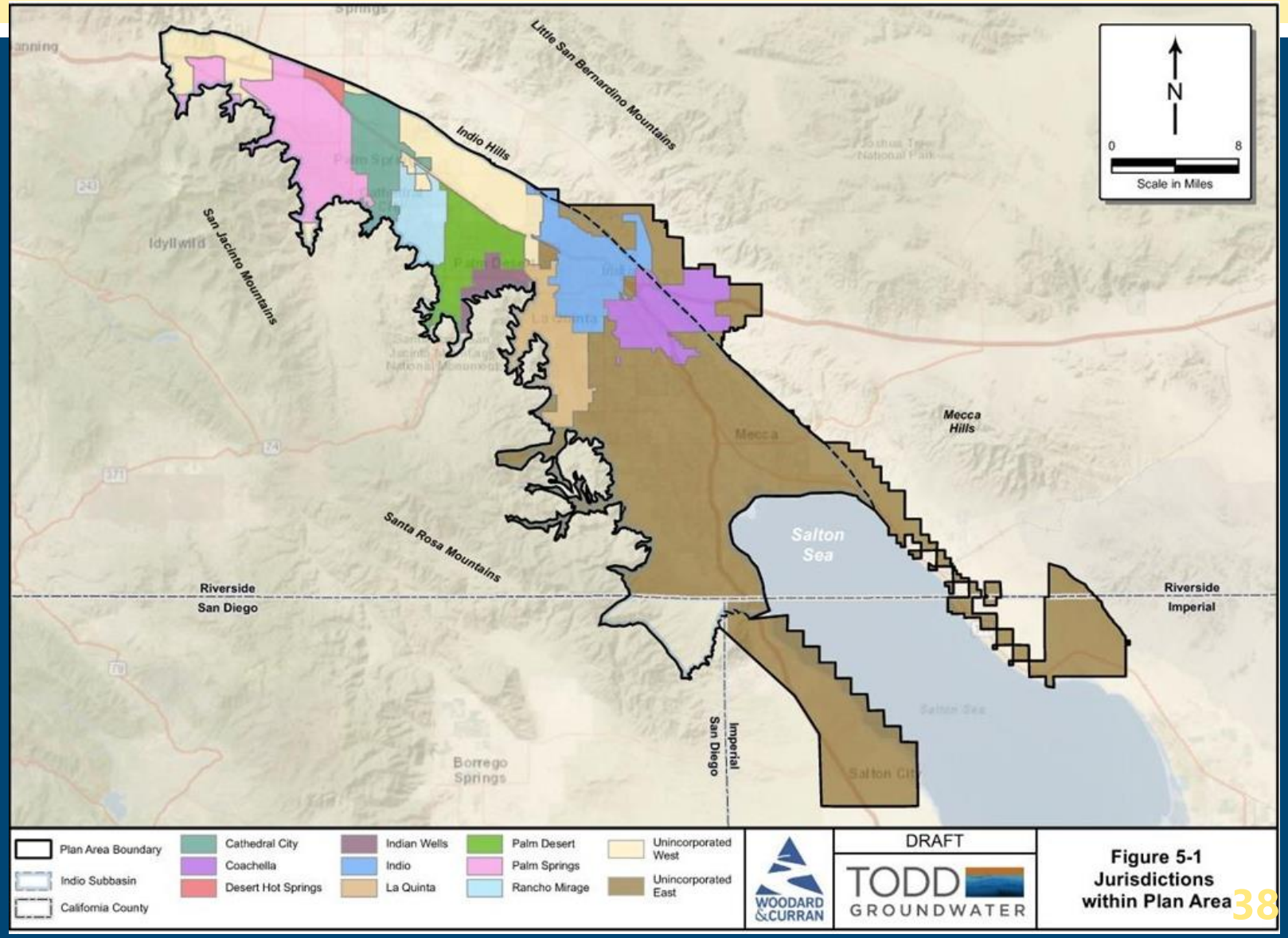


Figure 5-1
Jurisdictions within Plan Area

Municipal Demands – Forecast Process

1. Regional Growth Forecast

Using SCAG 2020 growth projections for households, population, and employment

2. Land Use Inventories

Allocating growth to residential and non-residential based on SCAG land use mapping

3. Unit Demand Factors

Using 5-year (2015-2019) averages from customer billing data to develop unit demand factors

4. Projected Water Loss

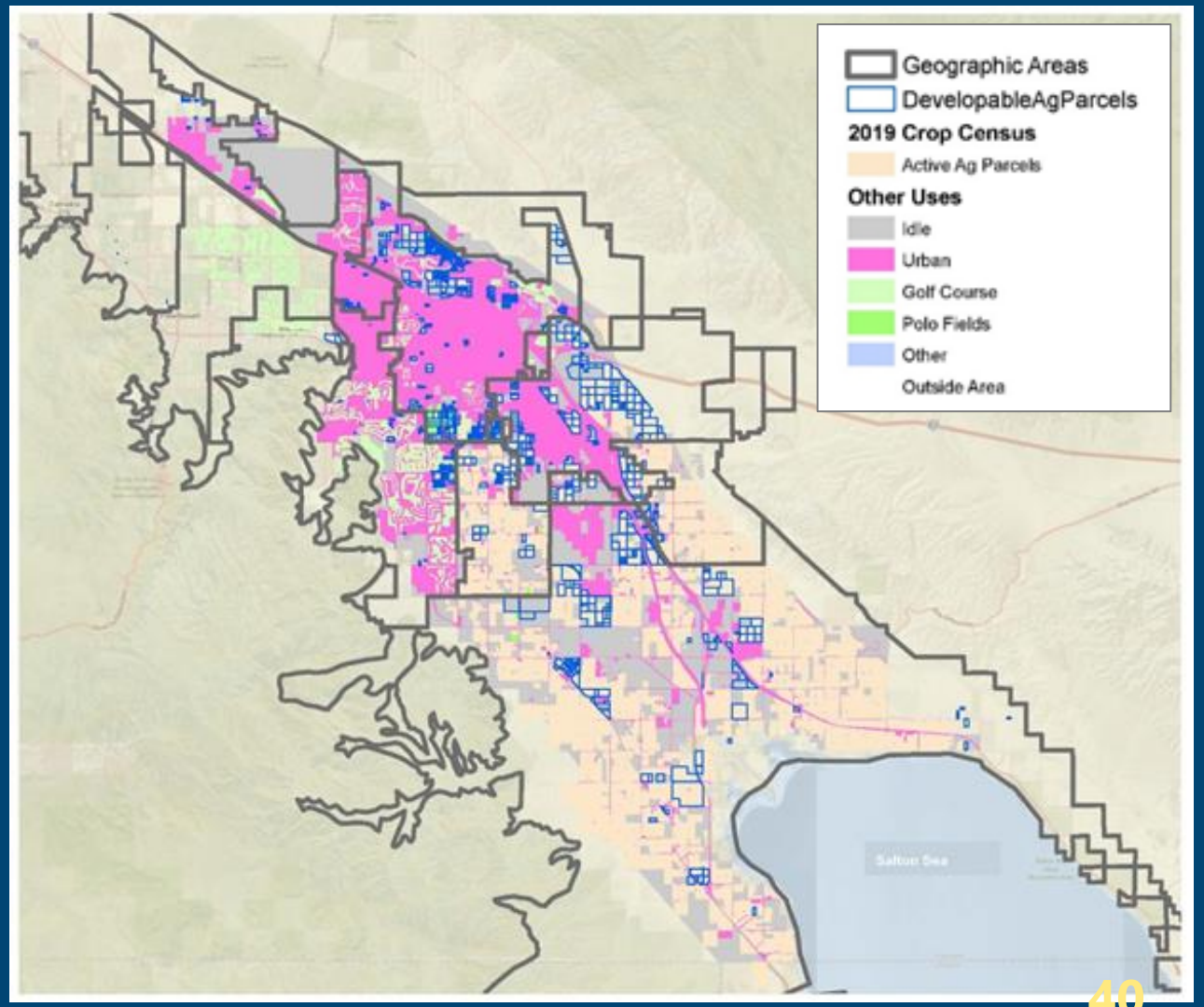
Developing water loss estimates based on validated Water Loss Audit reports

5. Adjustment Factors

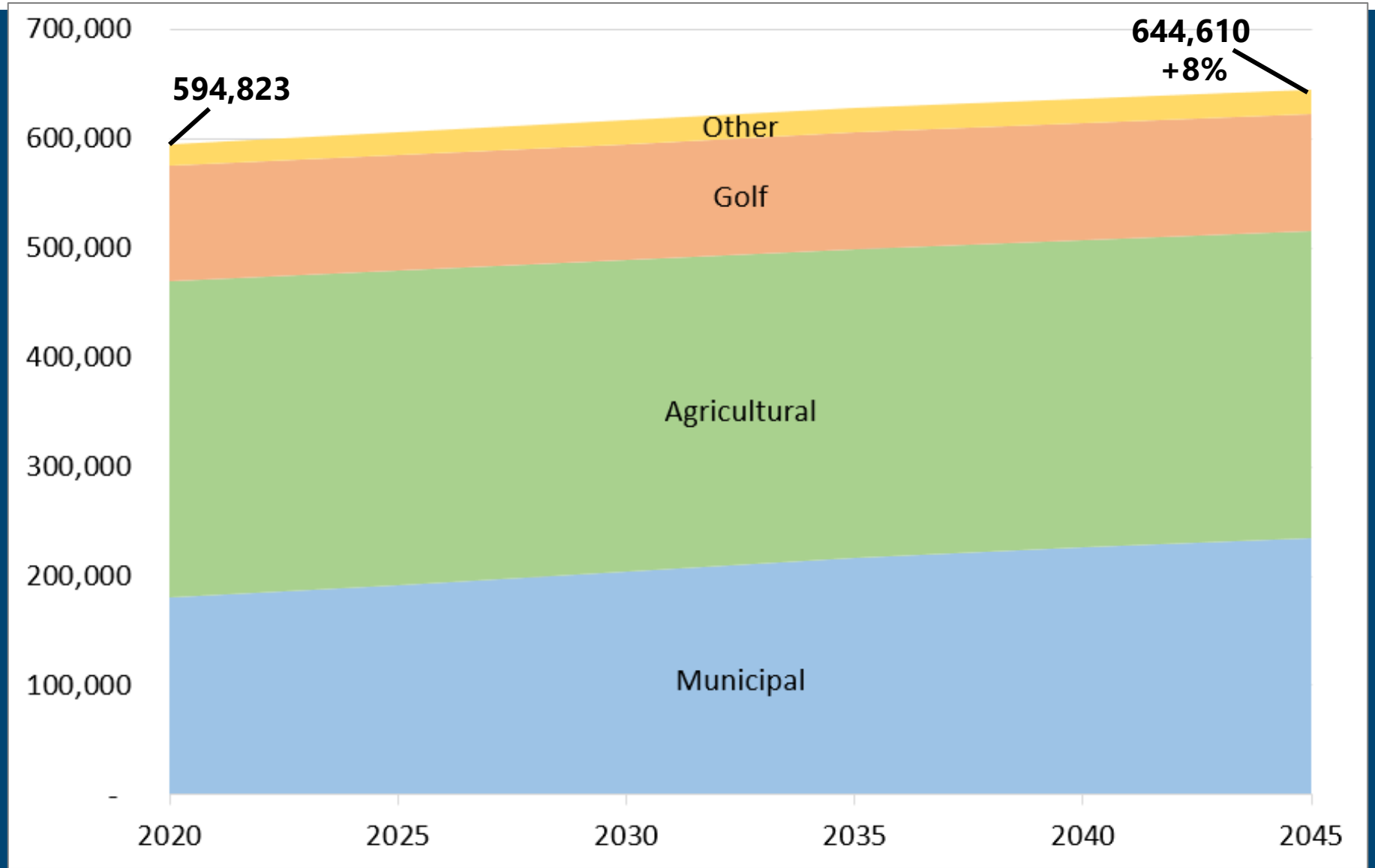
Developing conservation savings estimates for indoor and outdoor (new development only) water use

Agricultural, Golf, and Other Demands

- Agricultural demand forecast is based on current agricultural use and expected conversion of idle and agricultural lands
- Golf demand forecast considers market trends and currently proposed golf courses within the Plan Area
- Other demand forecast includes fish farms, duck clubs, polo/turf, and potential surf parks



Total Projected Demand (AFY)



Supply Portfolio for Indio Subbasin

Groundwater
- Natural Infiltration
- Net Groundwater Inflow

SWP Exchange Water
- Table A Amount
- Yuba Accord
- Delta Conveyance Facility
- Lake Perris Seepage
- Sites Reservoir

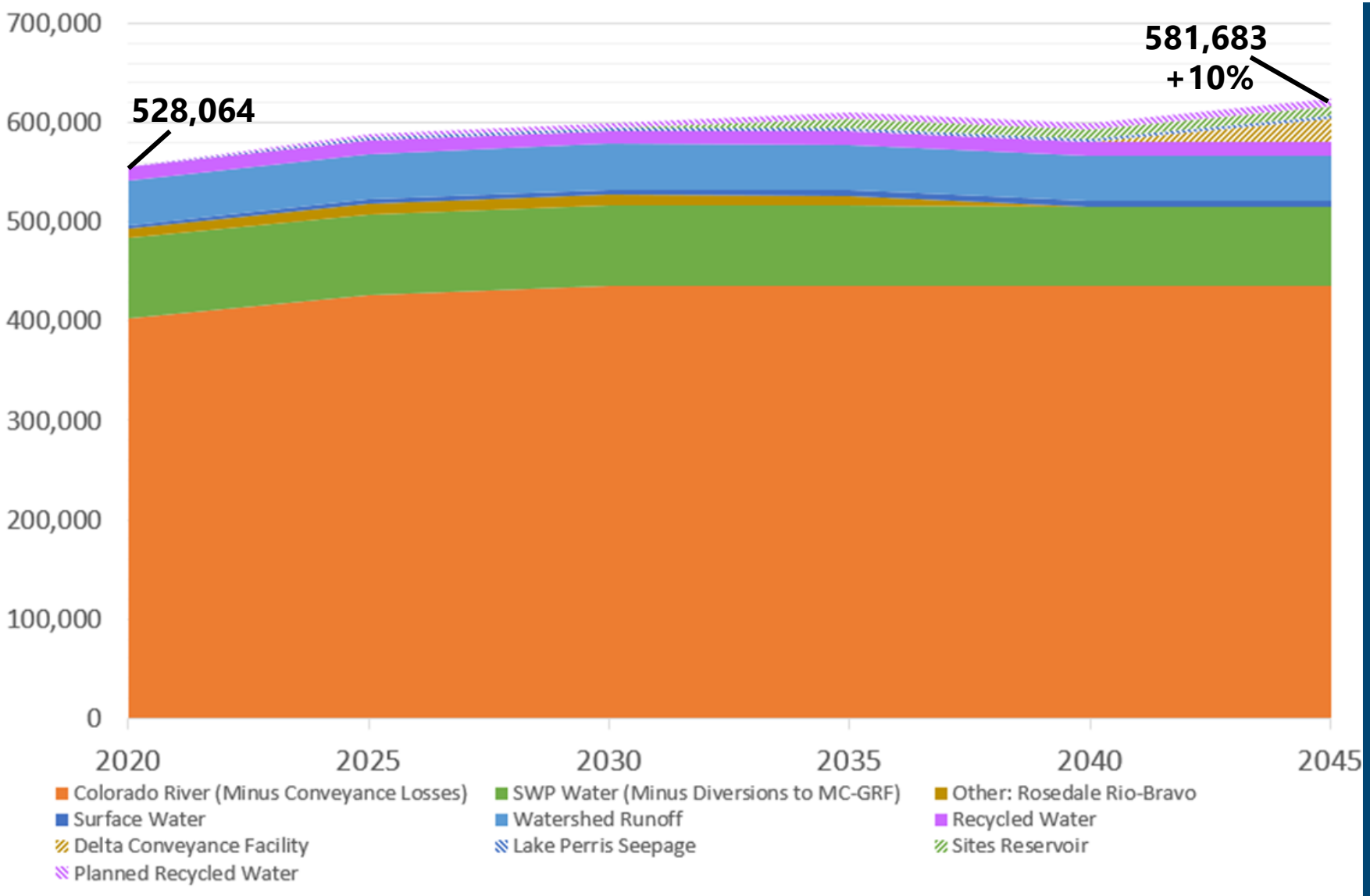
Colorado River Water
- QSA Base Entitlement
- IID/CVWD Transfers
- MWD SWP Transfer
- Minus Conveyance Losses

Recycled Water
- Based on Municipal Wastewater Flow Projections

Surface Water
- Snow, Falls & Chino Creek
- Whitewater River

Other Supplies
- Rosedale Rio-Bravo

Supply Forecast – Projected Future Supplies with Climate Change (AFY)



Climate change conditions are projected to reduce available water supplies by up to 40,000 AFY

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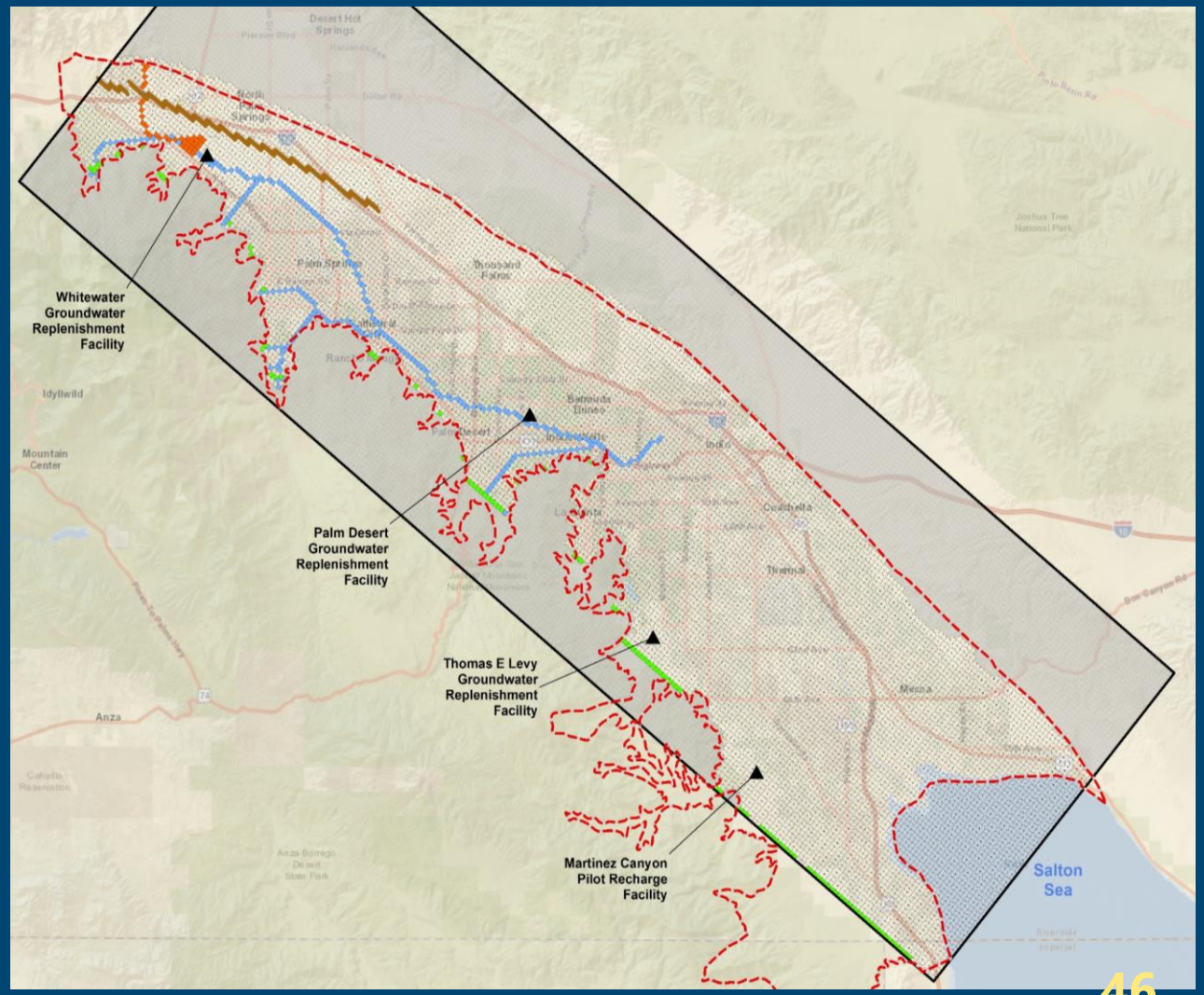
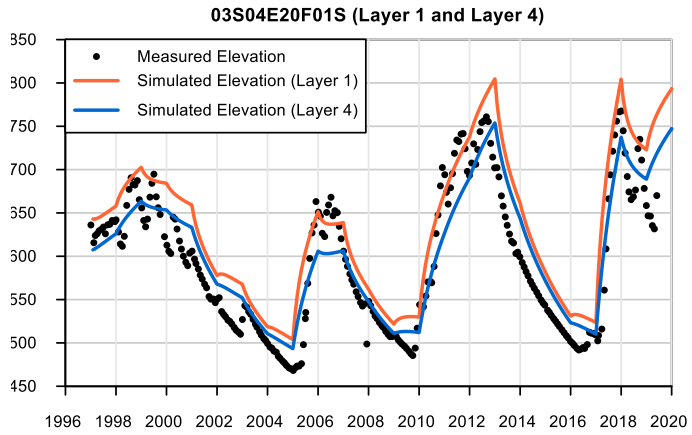
Indio Subbasin Groundwater Model

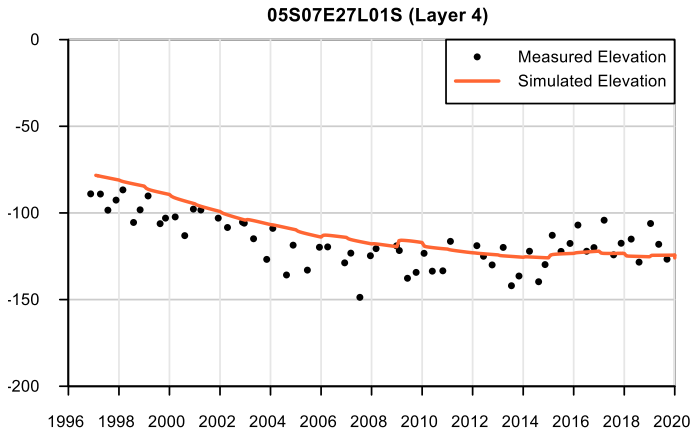
- Extended modeling through 2019
- Updated 2009-2019 recharge and pumping
- Updated Salton Sea elevations (1997-2019)
- Used more-accurate land surface elevations and sea bathymetry
- Improved 1997-2008 inputs in Garnet Hill Subarea
- Updated subsurface inflow boundary conditions from adjacent subbasins

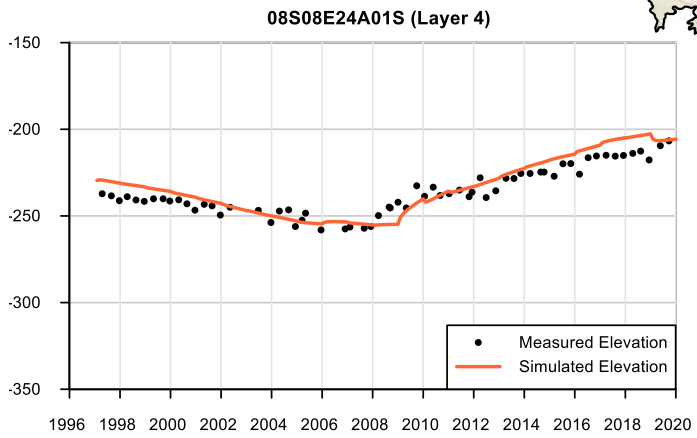


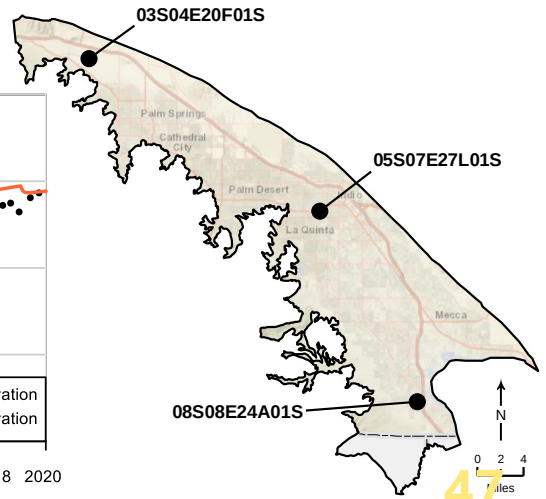
Model Update Summary

- Historical model accurately simulates shallow and deep groundwater levels in all areas of the subbasin
- Can be used to predict future water level and storage changes under different inflow and outflow scenarios for 50 years into the future
- Model provides forecasts of future drain flows, Salton Sea interactions, and other water budget conditions









Plan Scenarios – Assumptions

No New Projects = Baseline

Baseline w/ Climate Change

- Baseline assumes no new projects
- Not realistic because additional projects already planned
- Provides a comparison of future conditions with and without climate change/drought

Five-Year w/Climate Change

Future Projects w/Climate Change

Expanded Ag w/Climate Change

Plan Scenarios – Assumptions

No New Projects = Baseline

Baseline w/ Climate Change

Five-Year w/Climate Change

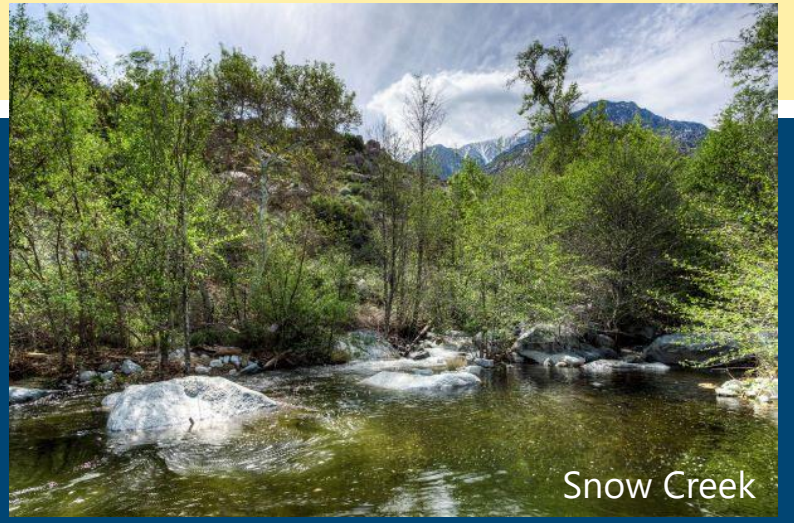
Future Projects w/Climate Change

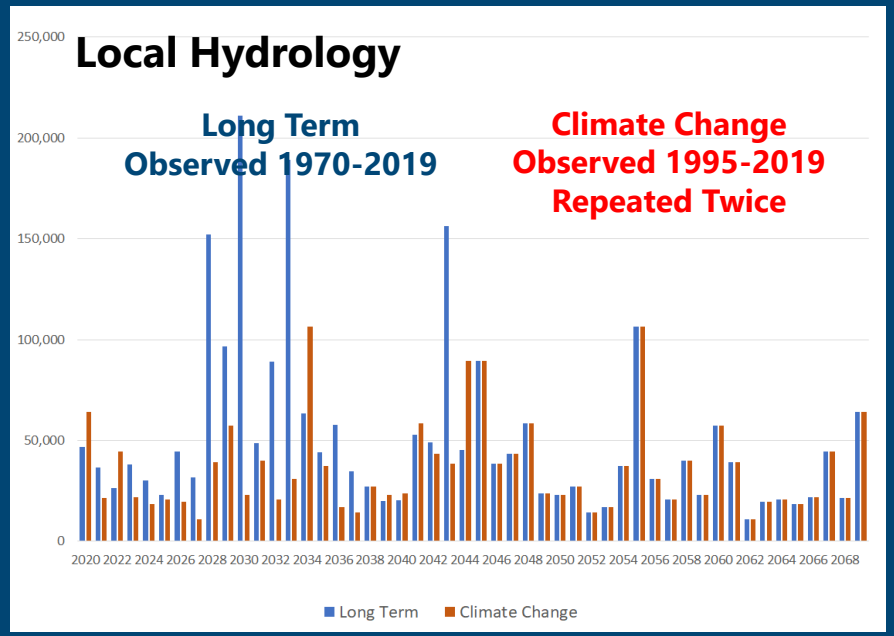
Expanded Ag w/Climate Change

- Simulations of additional scenarios with 5-year (near-term) projects, future projects, and expanded agriculture
- Additional scenarios include climate change/drought

Climate Change – Assumptions

- Scenarios use recent (drier) patterns
- For local inflow:
  - Baseline uses long term-hydrology – modeling repeats historical conditions (1970-2019) for future 50-years
    - Estimated natural infiltration 43,000 AFY
  - Climate change scenarios use recent 25-year period (1995-2019) which includes multiple droughts – modeling repeats drier pattern twice for 50-years
    - Estimated natural infiltration 29,200 AFY





Climate Change – Assumptions

- Scenarios use recent (drier) patterns
- For imported water:
  - State Water Project:
    - Deliveries of SWP water have been impacted by legal, environmental, and drought conditions
    - SWP deliveries = 45% over last 14 years
    - Under future climate, DWR projects SWP deliveries will be reduced by additional 1.5%
  - Colorado River:
    - If Lake Mead reservoir levels decline, CVWD will participate in California's contribution under the Lower Basin Drought Contingency Plan
    - Assumes reduction in QSA water for direct delivery and replenishment by 14,000–24,000 AFY


Thomas E. Levy GRF


Coachella Canal

Projects & Management Actions – Selected

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

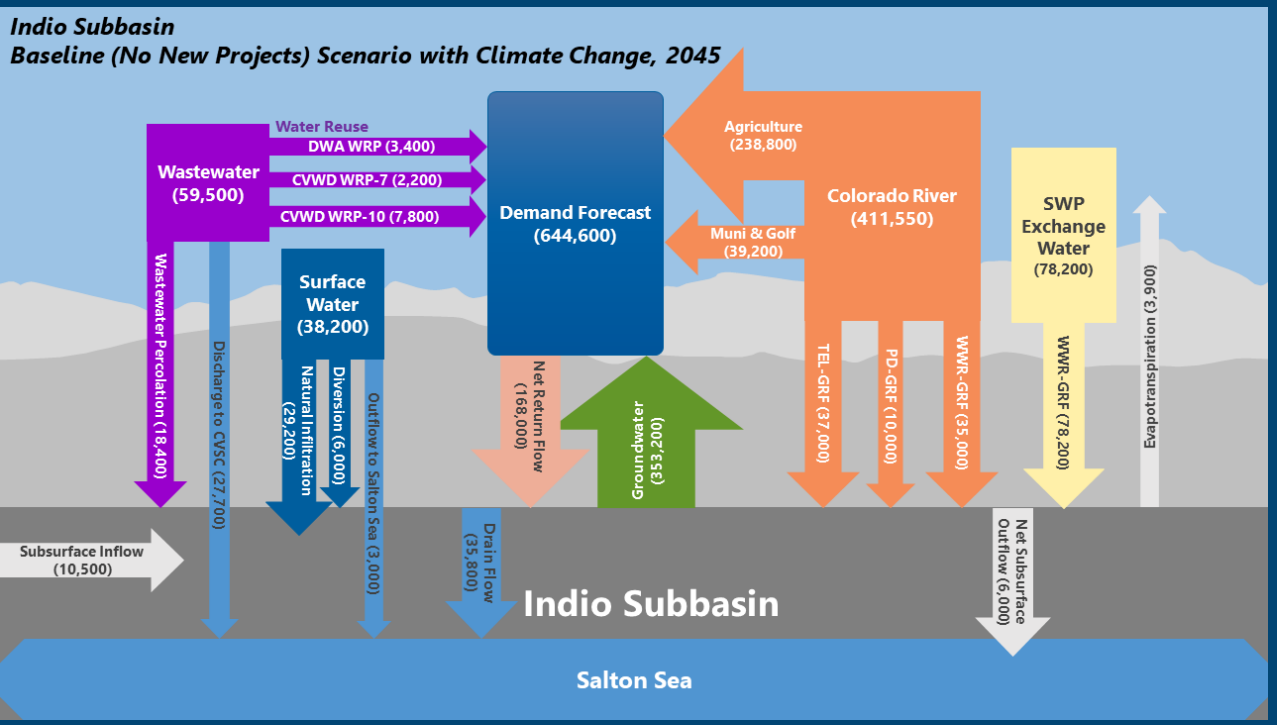
26: CV-SNMP GW Monitoring Program Workplan

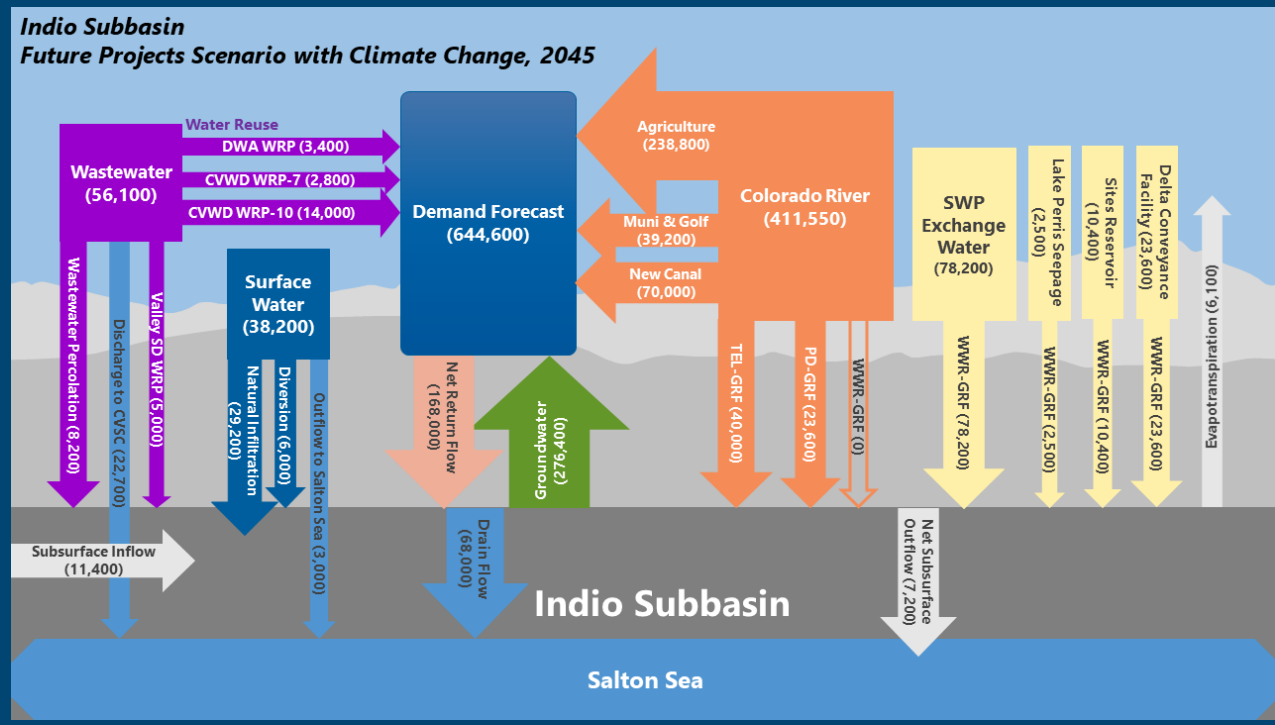
27: CV-SNMP Development Workplan

28: Colorado River Salinity Forum

29: Source Water Protection

Plan Scenarios Reflect Varying Water Supplies and PMAs





Simulation Results are Positive with Implementation of PMAs

Simulated 2020-2070 Cumulative Change in Storage

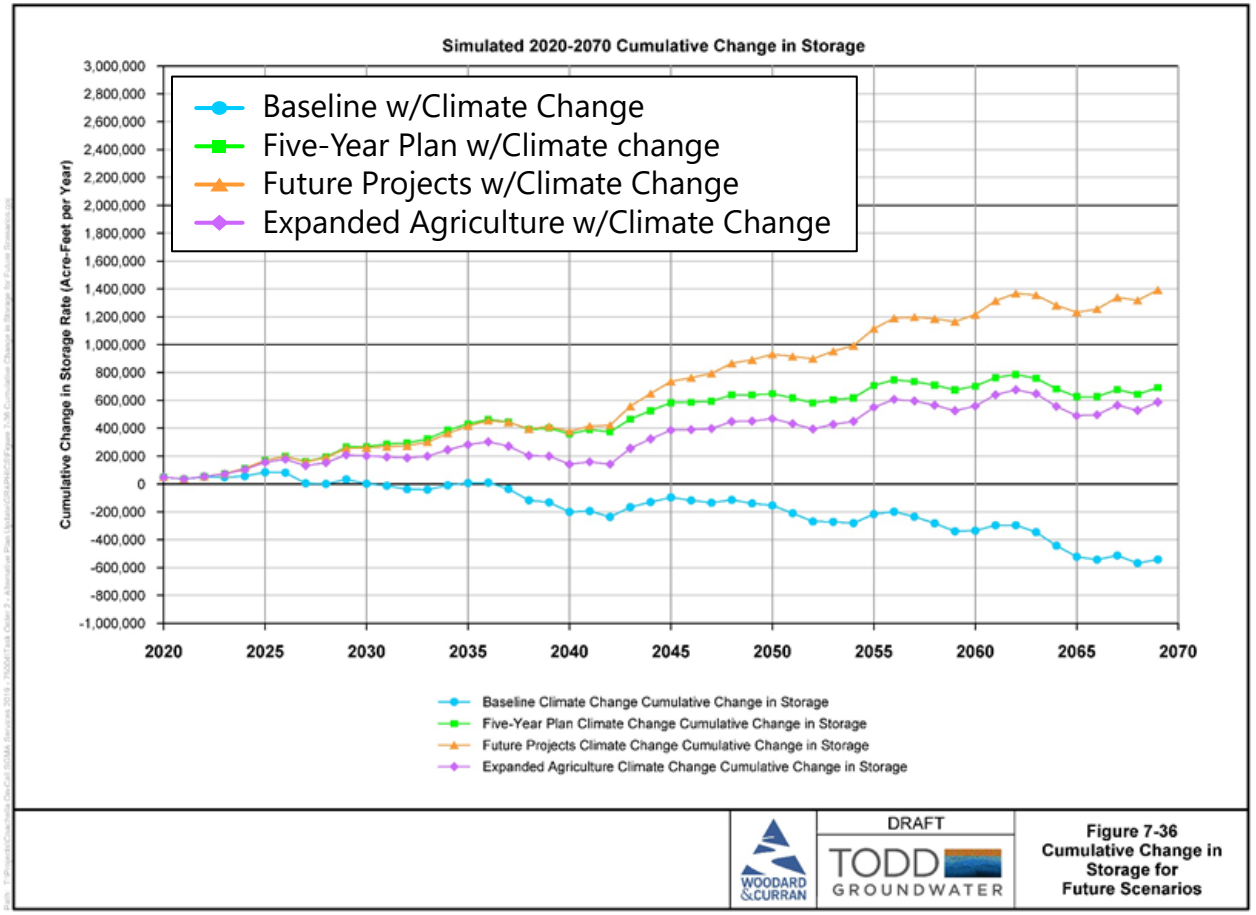


Figure 7-36
Cumulative Change in Storage for Future Scenarios

Simulated 2009-2045 Change in Groundwater Levels

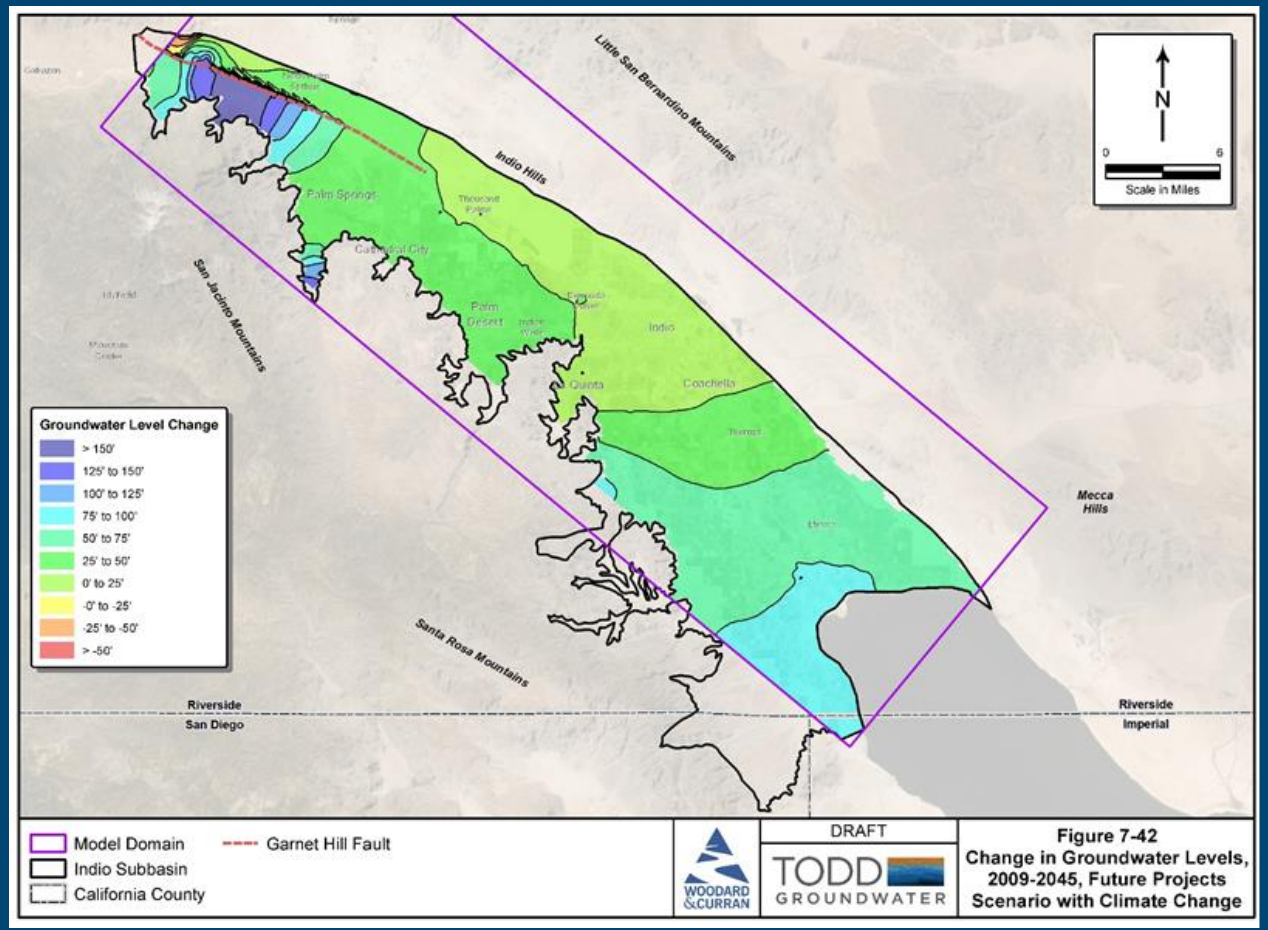


Figure 7-42
Change in Groundwater Levels, 2009-2045, Future Projects Scenario with Climate Change

Simulation Results – Take Aways

- Baseline scenario is not realistic and does not achieve basin sustainability
- "With Project" scenarios show gradual increases in groundwater levels and cumulative increases in storage
- Five-Year Plan PMAs are needed for supply-demand balance
- Additional Future PMAs are needed for reliability in the face of climate change and uncertain future water demands

Questions?

Agenda

- Welcome and Introductions
- 2022 Water Management Plan Update (Alternative Plan Update)
- Groundwater Conditions and Sustainable Management
- Water Demands and Supplies
- Numerical Model, Plan Scenarios, and Projects & Management Actions (PMAs)
- **Plan Evaluation and Implementation**
- Public Comment
- Get Involved

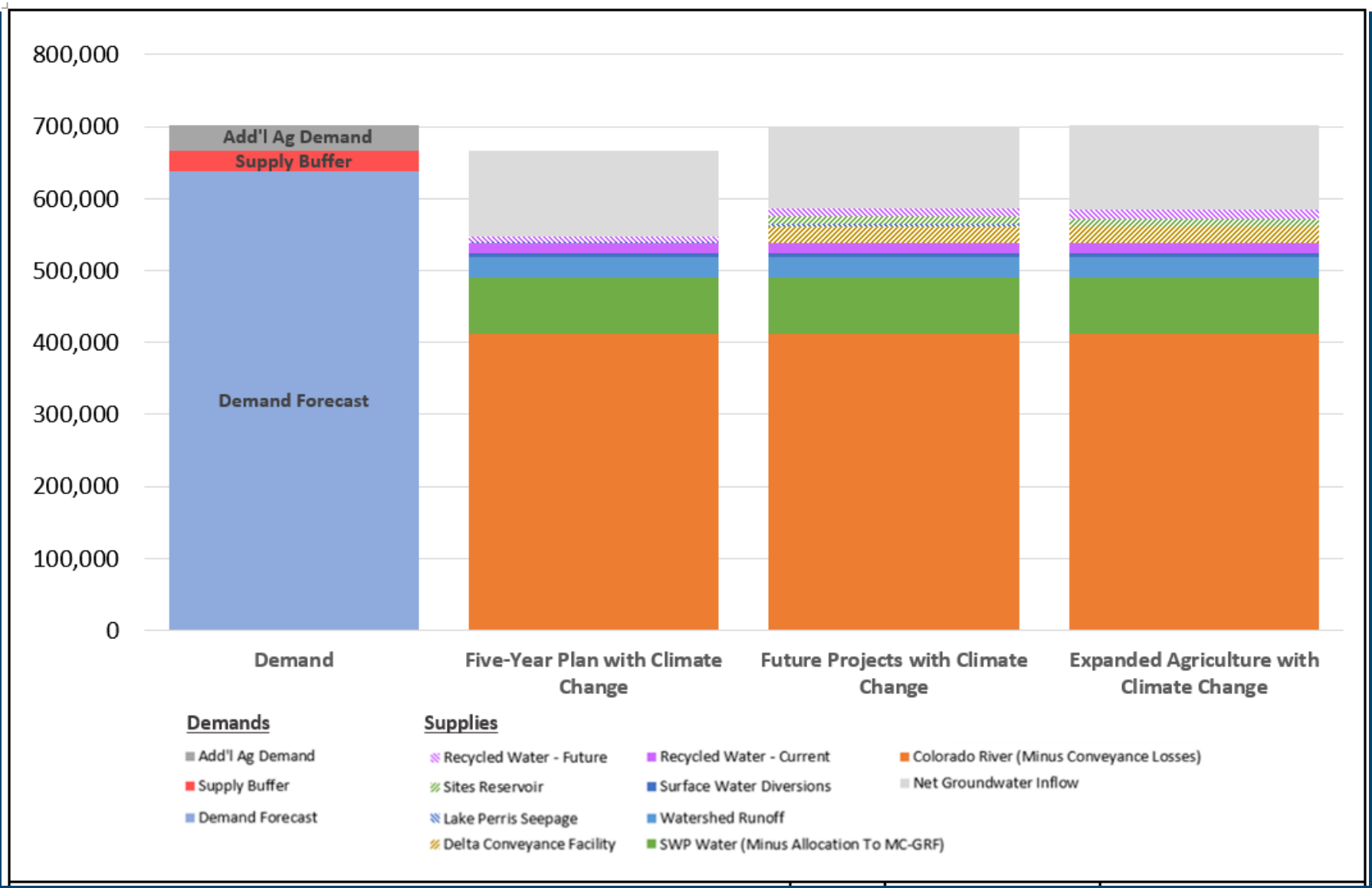
Plan Implementation Activities

- GSA Program Management
- Monitoring Programs
- Tribal Coordination
- Stakeholder Outreach
- Annual Reports
- 5-year Plan Update
- Monitoring Network Improvements
- Refine Subbasin Characterization
- Pursue Funding Opportunities
- Implement Projects & Management Actions

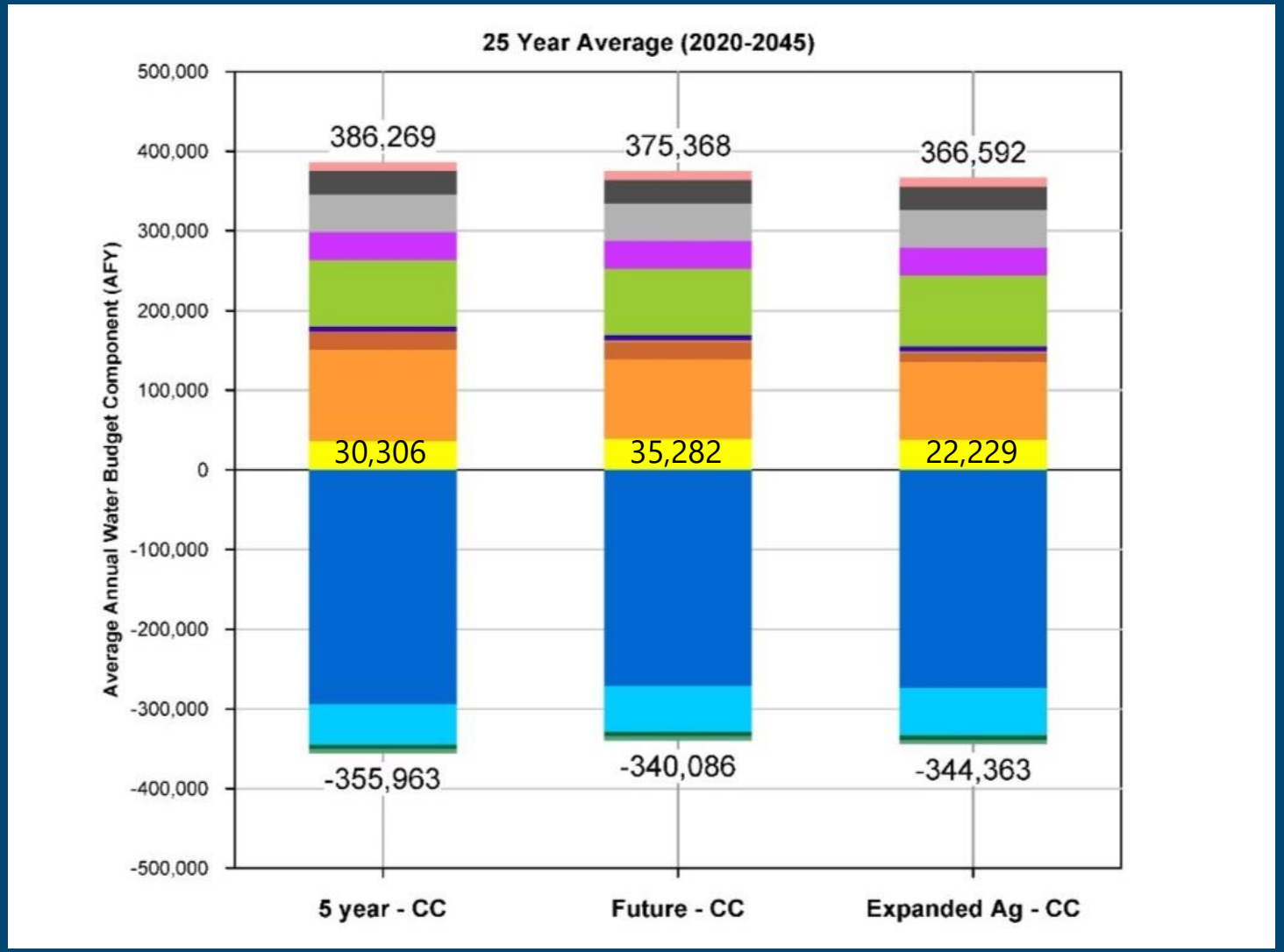
GSA Priorities in PMA Implementation

- GSAs established the following priorities:
  - Fully use available Colorado River water supplies
  - Support improvement of the long-term reliability of SWP supplies, including participation in the Delta Conveyance Facility
  - Continue developing recycled water as a reliable local water supply
  - Implement source substitution and replenishment for resilience in response to changing conditions and for maintenance of long-term groundwater supply reliability
  - Increase water-use efficiency across all sectors
  - Participate in development of the CV-SNMP to address salt and nutrient management in the Indio Subbasin

All "With Project" Scenarios have Adequate Supply to Meet Projected Demands



Simulated Water Balance Includes More Inflows than Outflows



The Plan Update demonstrates that the GSAs can meet the established Plan goal "*to reliably meet current and future water demands in a cost-effective and sustainable manner*".

As they have been doing over the last 20 years, GSAs will monitor trends in demand and supply availability and implement PMAs as needed.

Questions?

Public Comment

Input and feedback are welcomed

For Callers – you may need to press *6 to unmute

Next Steps – Review the Plan!

Plan Update can be downloaded:

www.IndioSubbasinSGMA.org

Please review the draft Plan and share your feedback with us!

- Comments are due on **October 29, 2021**
- Please send comments to:
  IndioSubbasinSGMA@woodardcurran.com

Next Steps – Plan Adoption & Submittal

- GSAs will review all comments submitted on the Plan Update and incorporate revisions as appropriate
- Final Plan Update will be prepared
- GSAs will each host a public hearing and consider adopting the Plan Update
  - *Tentative* dates are below:
    - Coachella Valley Water District – December 7
    - Coachella Water Authority – December 8
    - Desert Water Agency – December 7
    - Indio Water Authority – December 15
- GSAs will submit Plan Update to DWR for review and approval before January 1, 2022

Stay Involved – Visit our Website

www.IndioSubbasinSGMA.org