# Merced Groundwater Sustainability Plan (GSP) Public Workshop

**May 22, 2024**

Meeting will begin at 6:30pm or a few minutes after – thank you for joining us!

**Merced Irrigation-Urban GSA**
**Merced Subbasin GSA**
**Turner Island Water District GSA-1**

Image courtesy: Veronica Adrover/UC Merced

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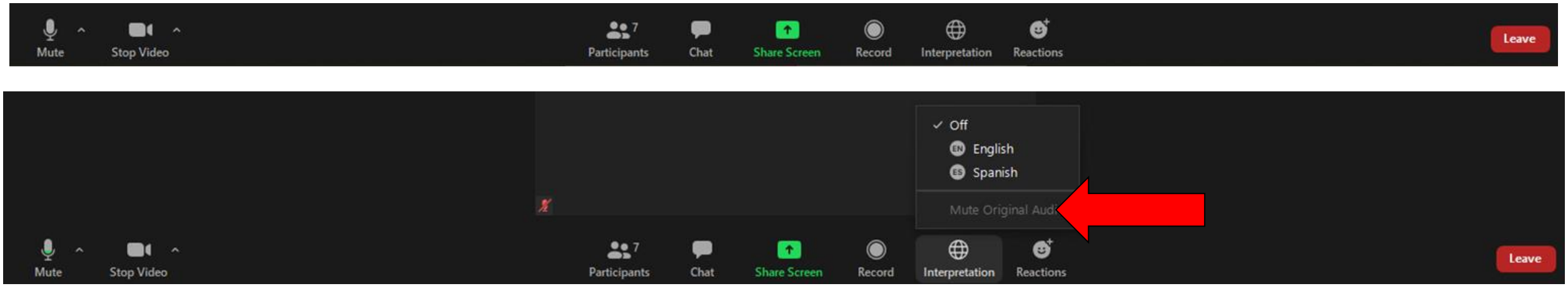
# Welcome, Instructions for Zoom
# Bienvenidos, Instrucciones para Zoom

We have two language audio channels available. English only speakers, please select English.

Si solamente habla español, debe seleccionar un canal de idioma




The meeting will have simultaneous interpreting, so you are welcome to comment in your native language.
La junta será interpretada simultáneamente, así que le invitamos a que haga comentarios en su lenguaje nativo.

# ZOOM Protocols & Meeting Guidelines

1. Online participants will be put on Mute to reduce background sounds. The meeting host will unmute you when it is your turn to speak.
2. During Presentations
   - The team will organize and moderate clarifying questions about presentation content.
   - Online participants: Use the Chat to Panelists feature to ask clarifying questions.
   - If you have questions or comments, please hold them until the discussion periods.
3. Discussion/Public Comment
   - We will take questions and comments from in-person participants first.
   - Online Participants: Use Raise Hand and we will call on you.
4. Meeting Guidelines
   - Please be concise, this is a challenging format for discussion
   - Be honest and constructive, build on the ideas of others

Image courtesy: Veronica Adrover/UC Merced

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# Agenda

1. Welcome
2. SGMA Overview & Merced GSP History
3. Topic 1: Progress towards sustainability
4. Topic 2: Actions to achieve sustainability
5. Topic 3: Updates to the GSP as a result of DWR's comments
6. Next steps

Image courtesy: Veronica Adrover/UC Merced

# SGMA Overview & Merced GSP History

Image courtesy: Veronica Adrover/UC Merced

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# Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP)

SGMA was passed in 2014 and required the following:

- Groundwater Sustainability Agencies (GSAs) must be formed
- GSP must be prepared and submitted by January 2020 for critically overdrafted basins
- GSPs must include measurable objectives and milestones in five-year increments to achieve sustainability within 20 years of GSP adoption
- GSPs must be updated every 5 years
- GSP development must be open and transparent, with stakeholder and public input

# Merced Subbasin: 3 GSAs, 1 GSP

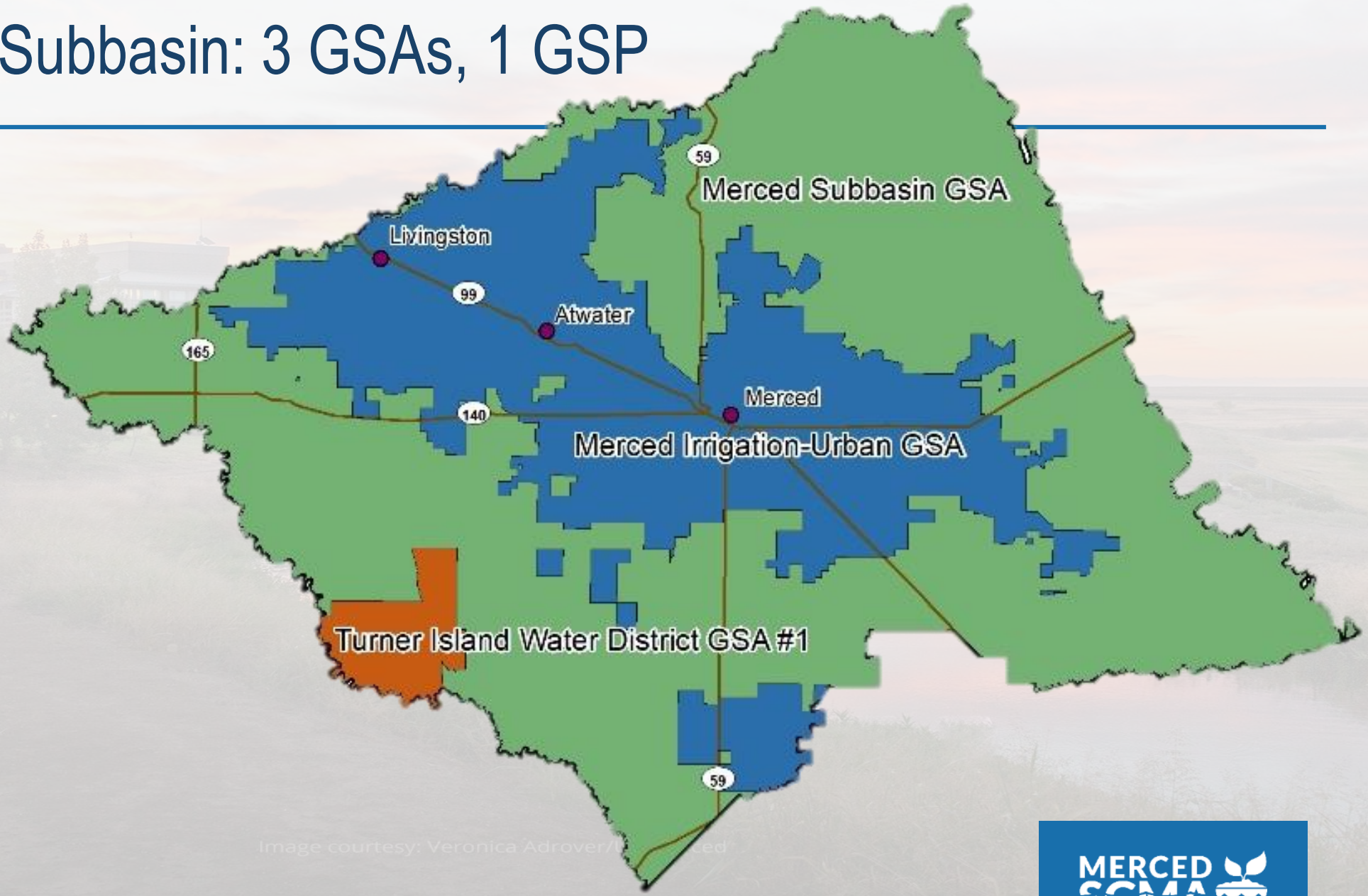


Image courtesy: Veronica Adrover/[illegible]ced

# Merced GSP Timeline

| 2018-2019 | 2020-2021 | 1/28/2022 | Feb – Jul 2022 | Aug 2022 – Mar 2023 | Mar 2023 – Aug 2023 | Oct 2023 – Jan 2025 |
|---|---|---|---|---|---|---|
| • Initial GSP Development | • DWR Review of Initial GSP | • DWR Released "Incomplete" determination | • GSPs had 180 days to address deficiencies | • Public Comment and DWR review of revised GSP | • DWR announces Approval (Mar) and prepares and releases detailed letter (Aug) | • GSP 5-Year Update |

**You are here**

Image courtesy: Veronica Adrover/UC Merced

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# SGMA Focuses on Halting Overdraft While Protecting Basin Health

SGMA has 2 main focus areas:

- Halt the overdraft by “balancing the water budget” (basin inputs = basin outputs)
- Establish objectives for six “sustainability indicators”:

# Topic 1: Progress towards sustainability

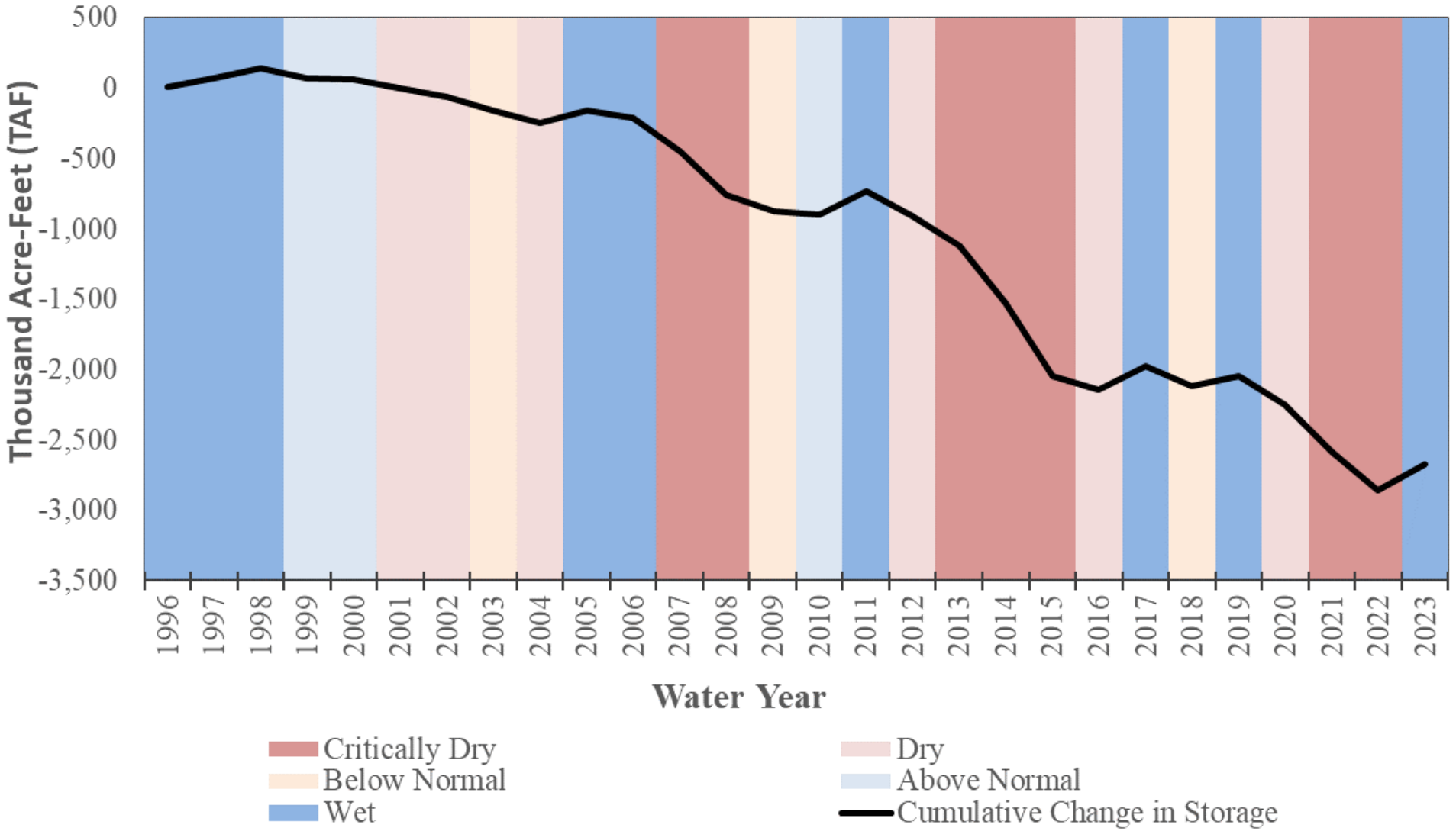
Image courtesy: Veronica Adrover/UC Merced

# What have we learned over the last 5 years?

- New information about geology (rock and soil formations under the surface) from Airborne Electromagnetic (AEM) data collection → improves modeling projections
- Multiple years of water quality monitoring have helped us look at whether drought vs wet years have an impact on water quality
- New and retrofitted monitoring wells have helped us fill data gaps and learn more about groundwater conditions in previously unmonitored areas
- Changes in storage respond closely with wet/dry years

Image courtesy: Veronica Adrover/UC Merced

# Hydrology and Storage changes

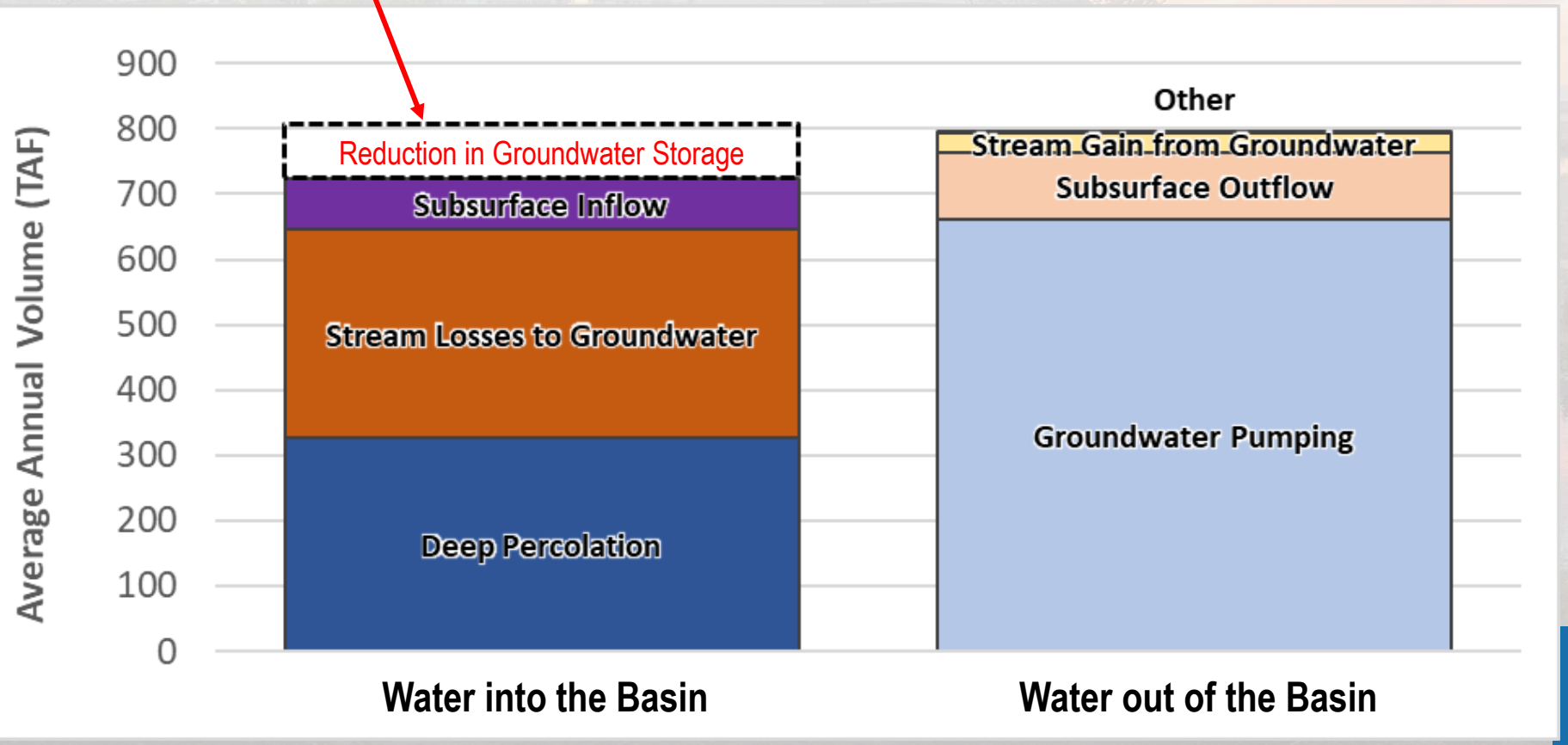


# Sustainability forecast (what it will take to get in balance)

Long-term projected water use scenario (with no further action) suggests an ongoing reduction in groundwater storage.

Two high-level actions to get in balance:

1) Reduce demand (pumping)
2) Add new supplies (recharge, use more surface water, etc.)




**Estimated to need 175,000 AFY of additional recharge or reduced groundwater pumping**
(to address reduction in groundwater storage AND other issues such as groundwater levels)

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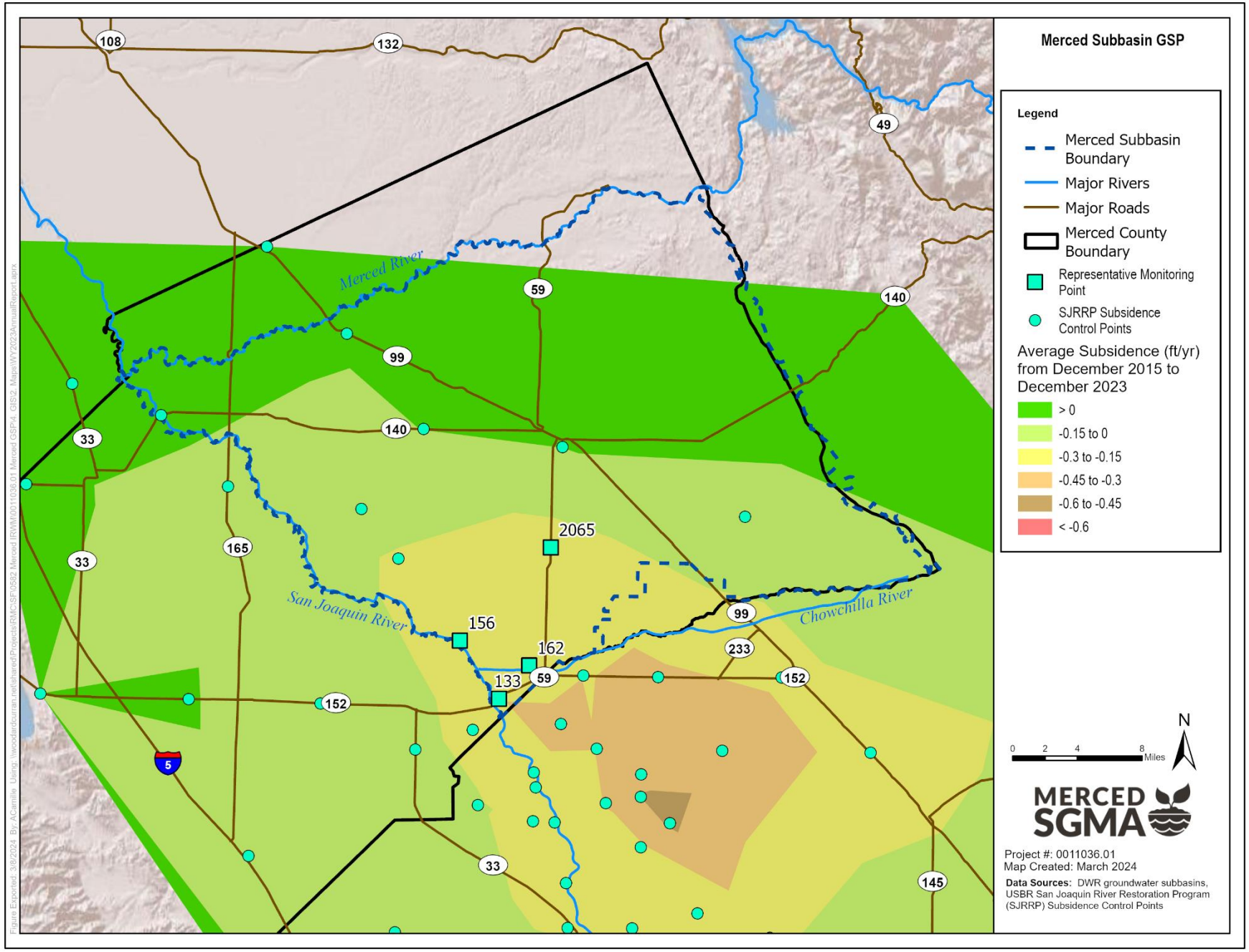
**Subsidence Dec 2015 – Dec 2023** shows an ongoing lowering of the ground level surface in southern end of Subbasin



# Questions, Comments, & Discussion

# Topic 2: Actions to achieve sustainability

Image courtesy: Veronica Adrover/UC Merced

# 10 Completed Projects to Date

- Conveyance projects that help agencies use surface water instead of groundwater (in-lieu recharge)
  - Up to 28,500 acre-feet/year of in-lieu recharge
  - Up to 4,500 acre-feet/year of direct recharge
- Projects to fill data gaps by installing monitoring wells
- Studies to inform future recharge projects

Image courtesy: Veronica Adrover/UC Merced

# 19 Ongoing/Upcoming Projects

- 7 involve direct recharge (up to 125,000 acre-feet/year)
  - *Note - 1 project accounts for up to 100,000 acre-feet/year of this total*
- 4 (some overlap with above) involve in-lieu recharge (up to 38,000 acre-feet/year)
- 11 other projects for:
  - Studies and planning
  - Filling data gaps
  - Water conservation to reduce demand
  - Other operational efficiencies that improve sustainability
- $15.5 million of funding from State of California to support the 19 projects

GSAs are using Merced IRWMP Opti website to list and track projects:
https://opti.woodardcurran.com/irwm/merced/login.php

Image courtesy: Veronica Adrover/UC Merced

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# La Paloma Mutual Water Company - G Ranch Groundwater Recharge, Habitat Enhancement & Floodplain Expansion Project

- Groundwater recharge ponds; designed to enhance the Pacific Flyway wetland habitat
- Located on 439 acres within the G-Ranch property
  - Enhances 270 acres of existing wetlands
  - Re-establish the remaining 169 acres of double-cropped farmland to floodplains
- Permanently reduce demand by 850 acre-feet per year
- Two sources of flood (surface) water (Bear Creek and Atwater/Peck Drain)
- The combined total project net benefit would be 4,270 acre-feet/year
- Project is undergoing planning; construction expected to start spring 2025

Image courtesy: Veronica Adrover/UC Merced

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# Crocker Dam Modification Project

- Installation of automatic gates at MID's Crocker Dam, located just west of Merced at the bifurcation of Black Rascal Creek and Bear Creek.
- Automatic gates allow MID to remotely operate the dam and adaptively manage the flows in both creeks.
- Provides improved flood control downstream, water storage, and can provide supply for groundwater recharge from stormwater (Flood-MAR).
- Significant benefit, subject to results of ongoing [flood] water rights efforts
  - e.g. November 2016-February 2017, 113,000 acre-feet passed through Crocker Dam
- Planning and design are currently underway.

Image courtesy: Veronica Adrover/UC Merced

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# LeGrand-Athlone Water District Intertie Canal - Phase 2

- Captures and stores floodwaters via 2-mile canal to connect MID's Booster Lateral 3 to Dutchman Creek northeast of Santa Fe Road
- Will convey 125 cubic feet per second (cfs) of floodwater for Flood Managed Aquifer Recharge (Flood-MAR) on approximately 40,000 acres of productive farmland in the Merced Subbasin
- Approximately 46,000 acre-feet/year benefits in all water year types
- Design is complete, construction expected to begin spring 2025

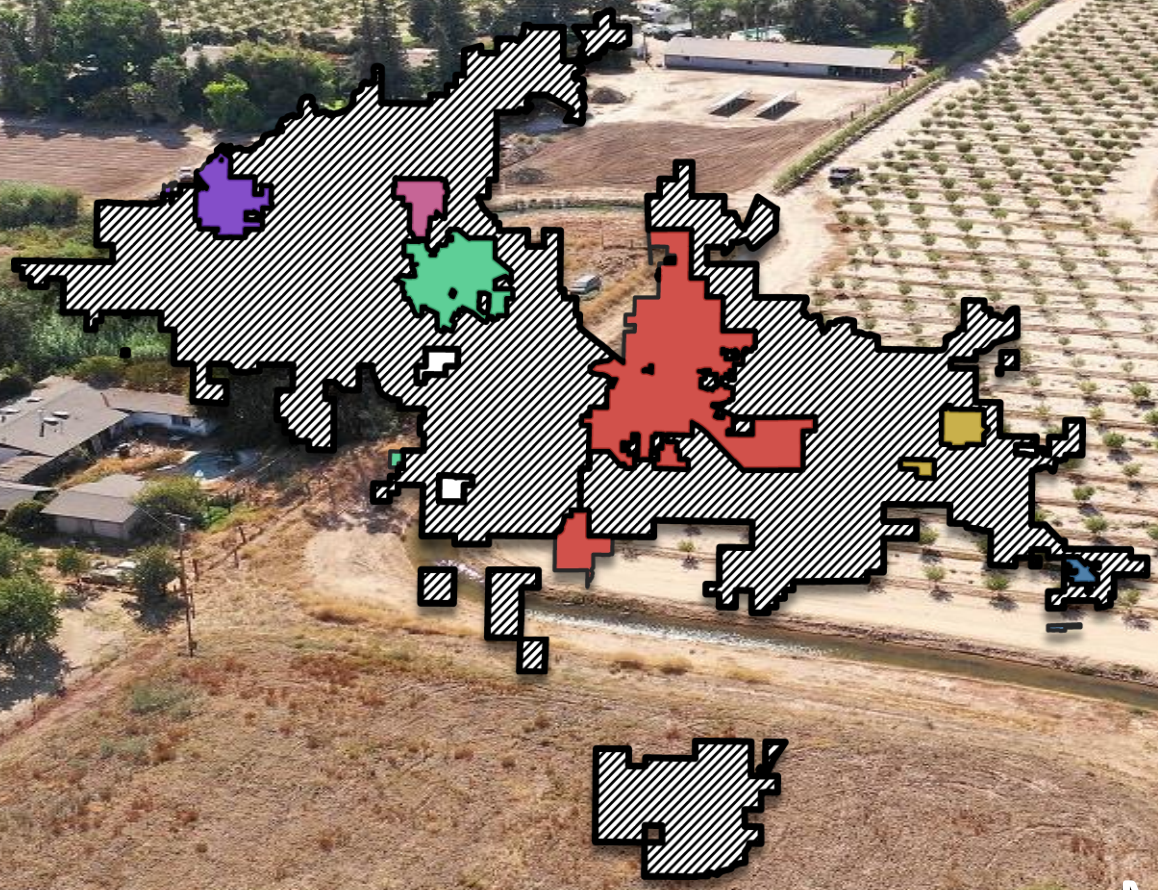
Image courtesy: Veronica Adrover/UC Merced

# Amsterdam Water District Surface Water Conveyance and Recharge Project

- Build 1-mile of 21” PVC pipeline to convey surface water from Canal Creek to an existing 125 acre-foot irrigation reservoir.
- Build 3 recharge ponds totaling approximately 53 acres
- Estimated benefit of 6,580 acre-feet per year (5,580 in lieu + 1,800 direct charge)
- Groundwater Recharge Feasibility Study expected in fall 2024; currently undergoing geotechnical investigation, which includes drilling boreholes and taking soil samples to depths of 50 feet.

Image courtesy: Veronica Adrover/UC Merced

# Merced Irrigation-Urban Groundwater Sustainability Agency



Merced GSP Workshop

May 22, 2024

MERCED IRRIGATION-URBAN GSA

# MIUGSA – Milestone Implementation Actions

- **June 2022 – MIUGSA Set Allocation at 3.3/AF/AC Over April 1, 2023-December 31, 2025 (1.1 AF/AC Per Year on Average)

- October 2022 – MIUGSA Adopted Well Registration Policy

- October 2023 – MIUGSA Adopted Rules and Regulations and GMIP
  - Provide framework for implementing the GSP within MIUGSA. Includes components for monitoring and enforcement, as well as opportunities for landowners to manage their available groundwater.
  - https://www.miugsa.org/documents

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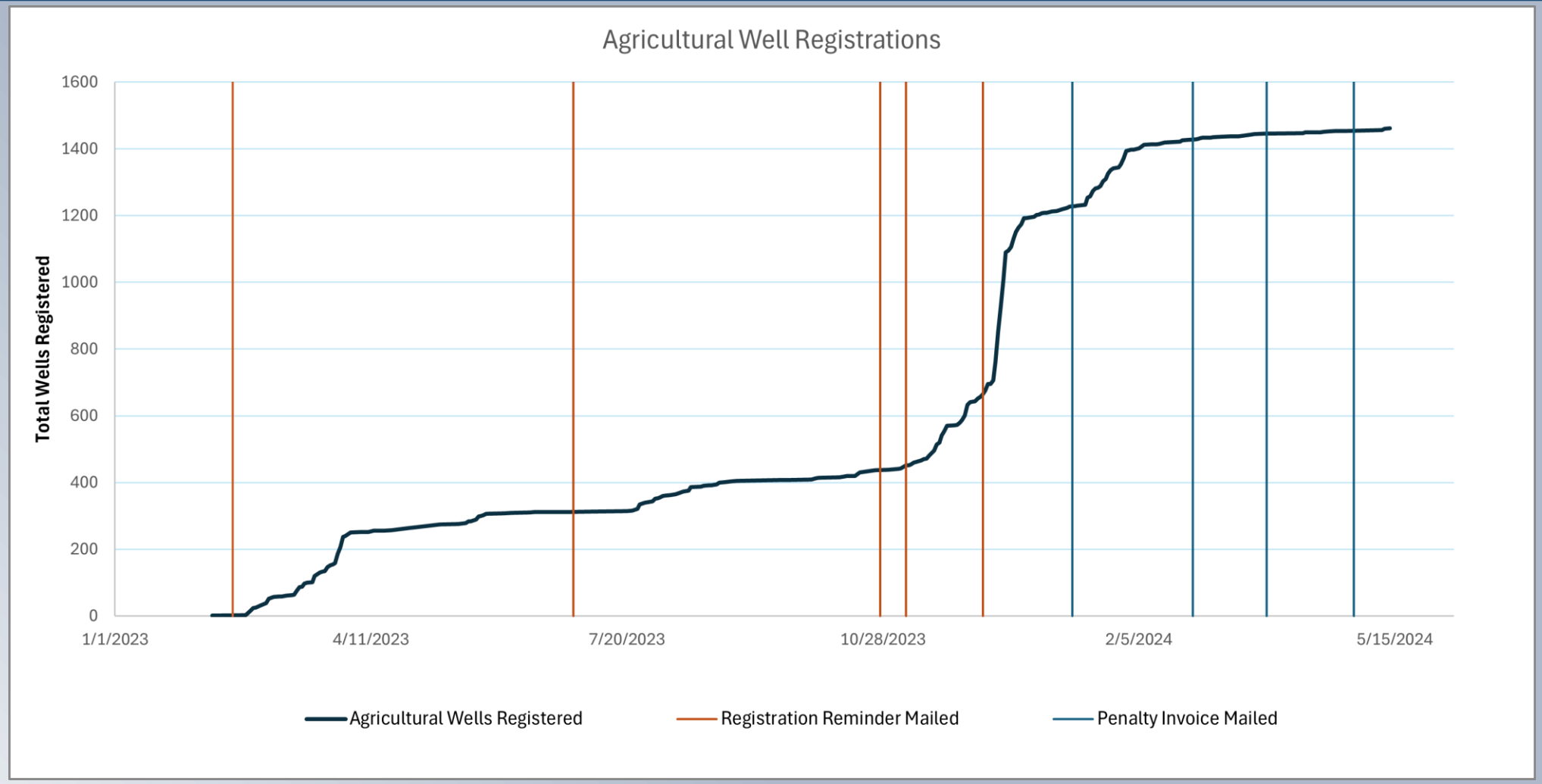
# MIUGSA – Well Registration Progress

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# MIUGSA – Well Registration Progress


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# MIUGSA - Rules/Regs Development

- Seven MIUGSA-specific Stakeholder Guidance Committee Meetings held between August 2021 and September 2023
  - Lengthy discussions of various rules/regulations/policies
  - Stakeholders indicated desired Certainty vs Flexibility for development of the Rules
  - Resulted in Policy Recommendations informing Rule development

| Program Component | Policy Recommendation Based on SGC Feedback |
|---|---|
| Length of Allocation Period | Maximum allocation period of 3 years. |
| Borrow-ahead | Should not be allowed at this time. |
| Carry-over | Some amount of carry-over is acceptable. Limit to be set per allocation period. |
| Penalties | Penalties should be enforced. |
| Pooling | Separate parcels owned by a common irrigator can be pooled within specified geographic regions (zones). |
| Limited Allocation Year | MIUGSA Board should have the power to set allocation limits during exceptionally wet or dry periods. |
| Trading | Should not be allowed at this time. |

# MIUGSA – Rules and Regs Key Items

- Groundwater Allocation and Allocation Period
- Pooling and Reallocations
  - Establishment of Groundwater Accounts
  - Opportunities and Limitations for Reallocating
    - Pooling Zones
- Intentional Recharge Credits
- Well Registration, Place of Use, Flow Meters
- Water Accounting System
  - Determination of Groundwater Extracted
- Penalties and Enforcement
  - Process (Notice and Order, Red Tag)
  - Penalty Amounts

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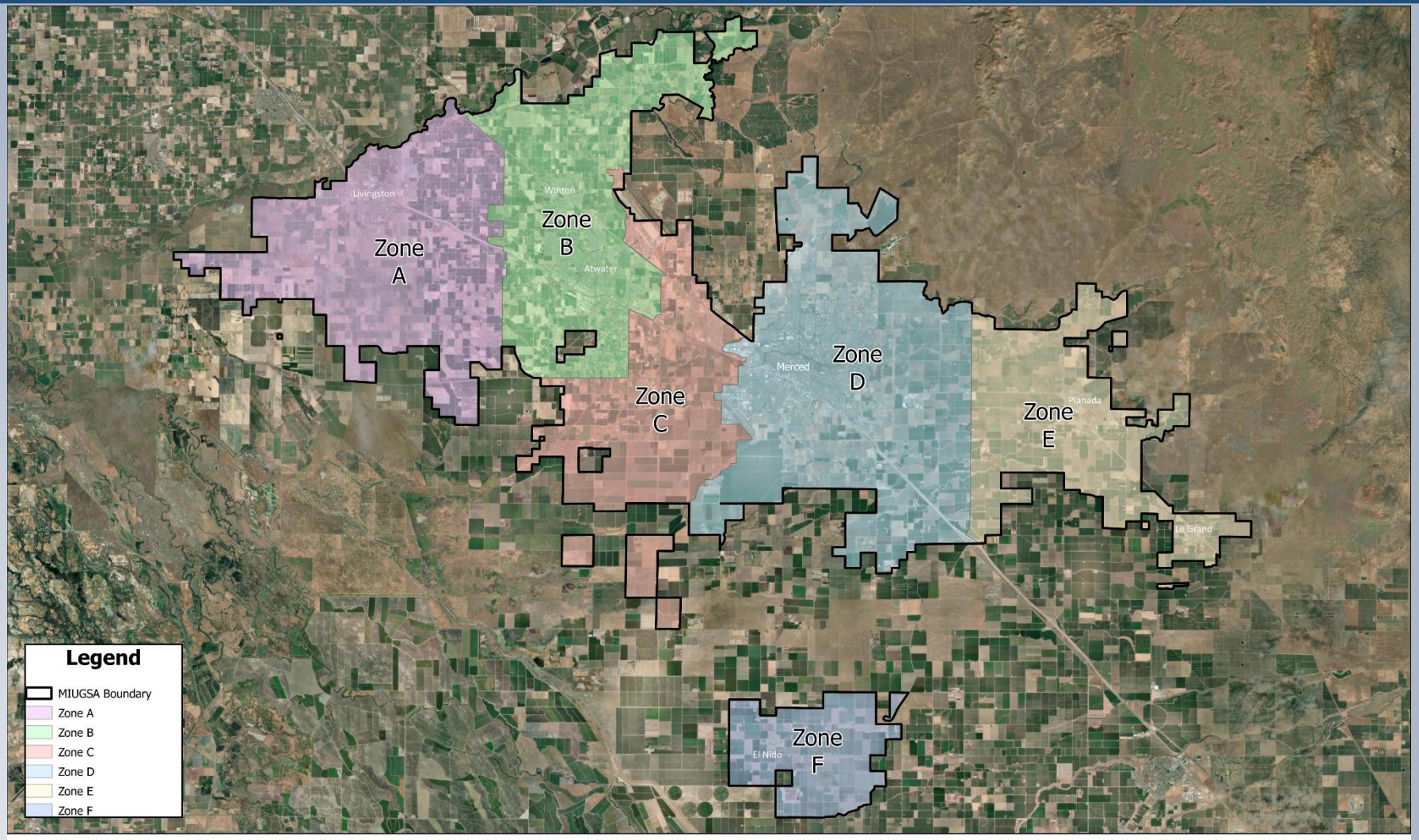
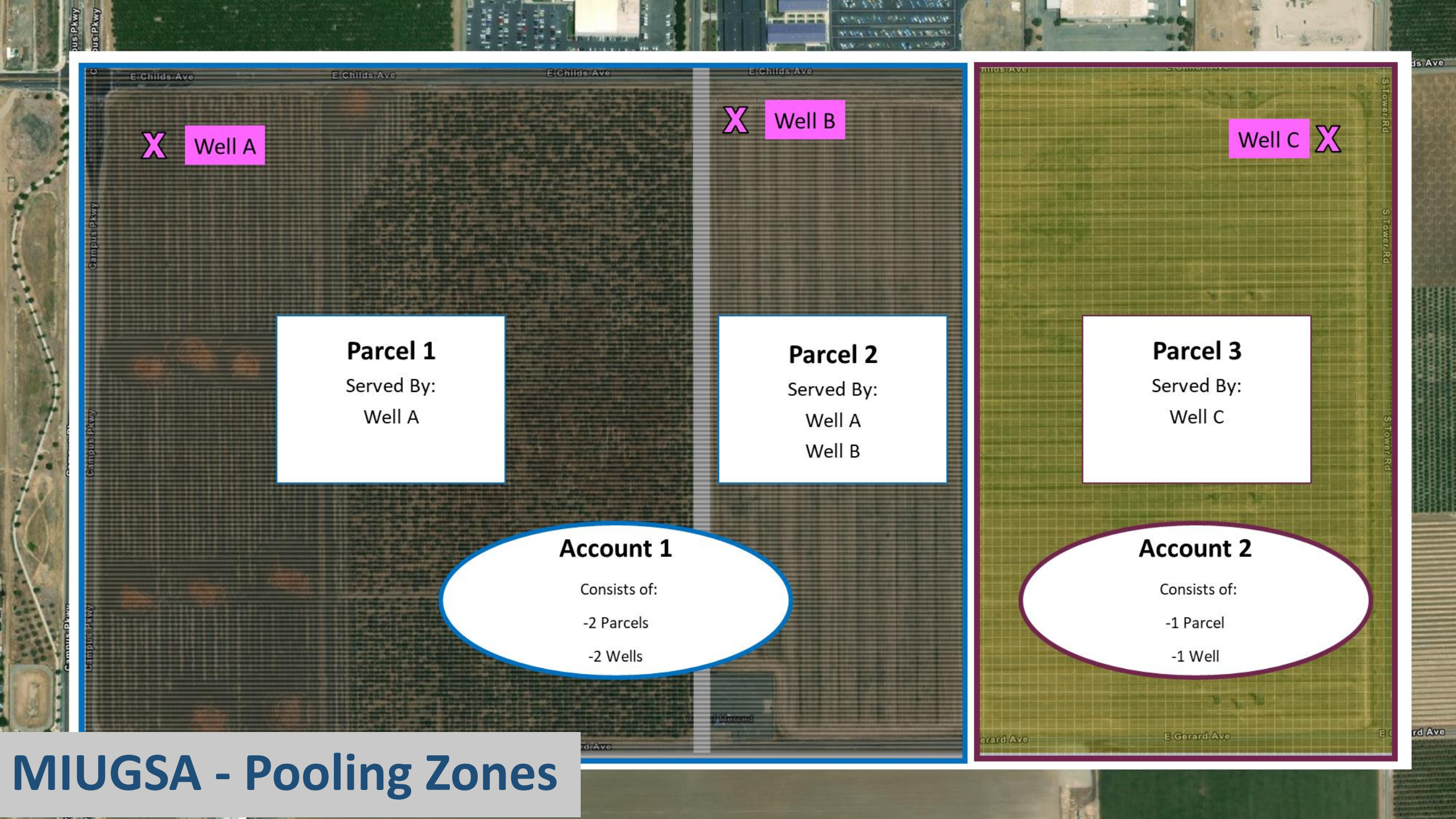
# MIUGSA - Pooling Zones






# MIUGSA - Pooling Zones

# MSGSA's Guiding Principles

## Adopted October 2022 for Allocations and Recharge

- **Strive for Certainty**: support long-term planning and business decisions by minimizing the potential for significant changes to policies and procedures
- **Support Flexibility**: design policies to enable water users to adapt their operations as best functions for their circumstances
- **Allow for Adaptability**: allow for periodic adjustments to reflect changing conditions and improved understanding, while minimizing disruptions to certainty.
- **Promote Equality**: ensure policies maintain consistent opportunities for all water users while recognizing unique hydrogeologic conditions throughout the service area
- **Target Simplicity**: create policies that are easy for users to understand and implement, and for the MSGSA to administer
- **Recognize Spatial Disparity**: allow for variances in policies that reflect differing hydrogeologic and other baseline conditions throughout the MSGSA service area to assure projects and management actions achieve tangible benefits toward GSP sustainability objectives.
- **Protect Domestic Water Availability**: design policies to assure projects and management actions either do not increase, or mitigate, risks to domestic well water supplies
- **Facilitate Economic Stability**: optimize the economic benefits of irrigated agriculture to the citizens of Merced County during the transition to lower groundwater use.

Merced Subbasin
Groundwater Sustainability Agency

# Allocation Framework Recommendations
(as of February 8, 2024)

- Focus currently on **agricultural lands only**
  - *Non-agricultural uses of groundwater to be addressed in separate policy conversations*

- Two tier allocation
  1) per-acre quantity of Sustainable Yield of native groundwater (SY)
  2) per-acre quantity of Additional Pumping Allowance (APA) that will decrease to zero by 2035 for most Sustainability Zones (see map on next slide)

- 5-Year rolling bucket concept to provide flexibility to growers to manage change across time

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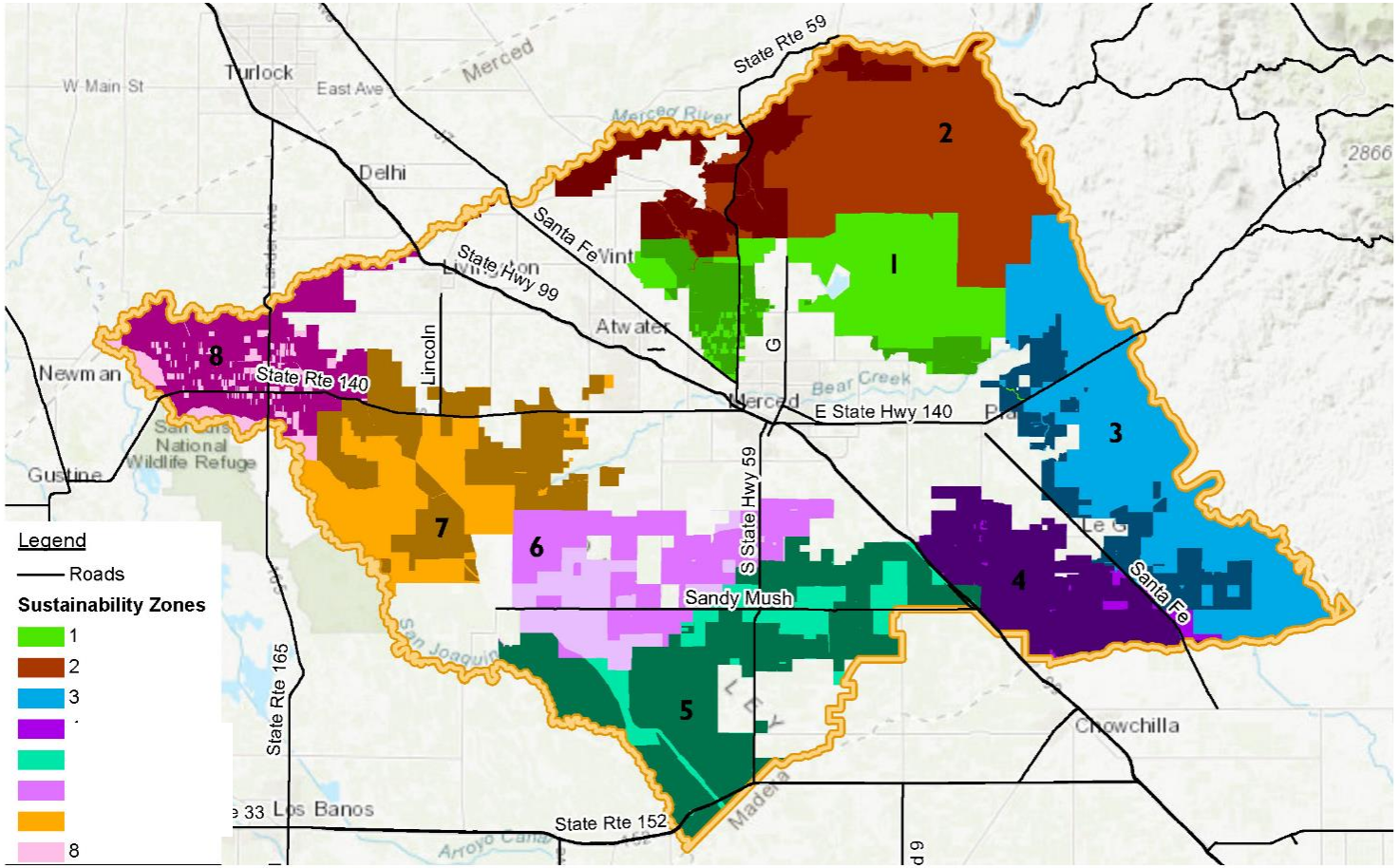
# REVISED SUSTAINABILITY ZONE MAP




- Zones recognize the spatial variance of groundwater conditions
- Additional Pumping Allowance (APA) varies by zone, related to objectives in the GSP

Notes:

1. Darker colored areas in each zone are classified as irrigated land uses (subject to Prop 218 fee).

eki

9/14/2023

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# Initial Allocation Values

(reflect consumptive use of groundwater – not pumping)

- Sustainable Yield of Native Groundwater (SY)
  - ✓ 13 inches/acre
  - ✓ Planned consistent into future
  - ✓ Data may cause some adjustment by Zone
- Additional Pumping Allowance (APA)
  - ✓ 11 inches/acre
  - ✓ Decreases to zero in 10 years (~1 inch/year)
  - ✓ Unless GSP groundwater levels are achieved

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# What's next…

- Continued outreach on allocation framework and values
- Invitation to join Groundwater Accounting Platform in May 2024
- Allocation Policy Adoption in July 2024
- Implementation
  - Testing during CY 2025
  - Fully functional in CY 2026

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# Other Management Actions

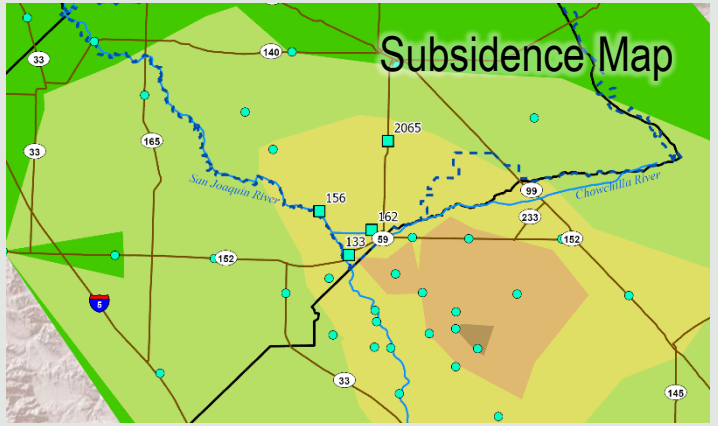
**Domestic Wells Mitigation Program**
Program that will respond to adverse impacts experienced by domestic well users where regional overdraft conditions occurring after 2015 are causing declining groundwater levels that interfere with groundwater production or quality.

MSGSA established a fund in 2022.

GSAs intend to develop this program soon.

**Above Corcoran Sustainable Management Criteria Adjustment Consideration**
Program that will consider adjustments to elements of the GSP in the southern portion of the Subbasin where subsidence (land elevation lowering) is occurring.

Example, it may involve allowances for more pumping in the shallow aquifer and less pumping in the deep aquifer which is thought to contribute to subsidence.



# Questions, Comments, & Discussion

# Topic 3: Updates to the GSP as a result of DWR's comments

Image courtesy: Veronica Adrover/UC Merced

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# Summary of Recommended Corrective Actions

- Actions DWR "believes will enhance the GSP and facilitate future evaluation" by DWR.
- "Strongly encourages [that they] be given due consideration and suggests incorporating all resulting changes to the GSP in the future."

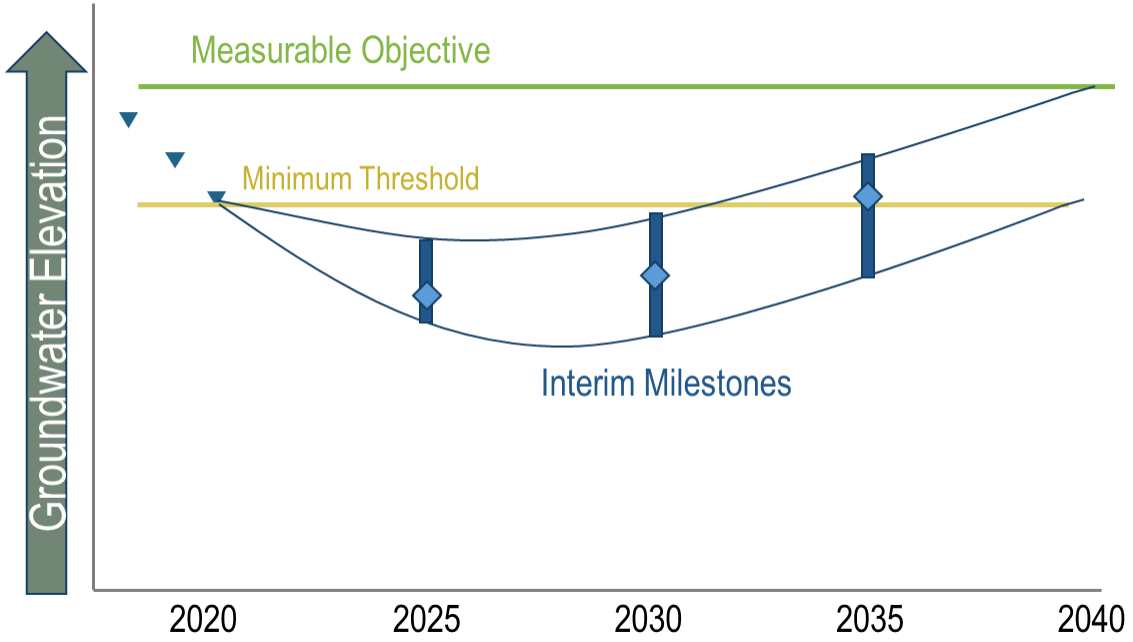
1. Implement Domestic Well Mitigation Program and evaluate water quality impacts from continued overdraft
2. Evaluate potential domestic wells impacts from continued overdraft
3. Identify total cumulative subsidence tolerable by critical infrastructure; revise definition of level of uncertainty
4. Investigate wells pumping from below the bottom of the basin
5. Establish SMC for groundwater storage
6. Explain/justify selection of SMC for WQ
7. Work towards SMC for interconnected surface waters
8. Fill data gaps for groundwater levels monitoring network
9. Explain how the timing and benefits of PMAs will reach sustainability by 2040

*SMC = sustainable management criteria*
*PMAs = Projects & Management Actions*
*WQ = water quality*

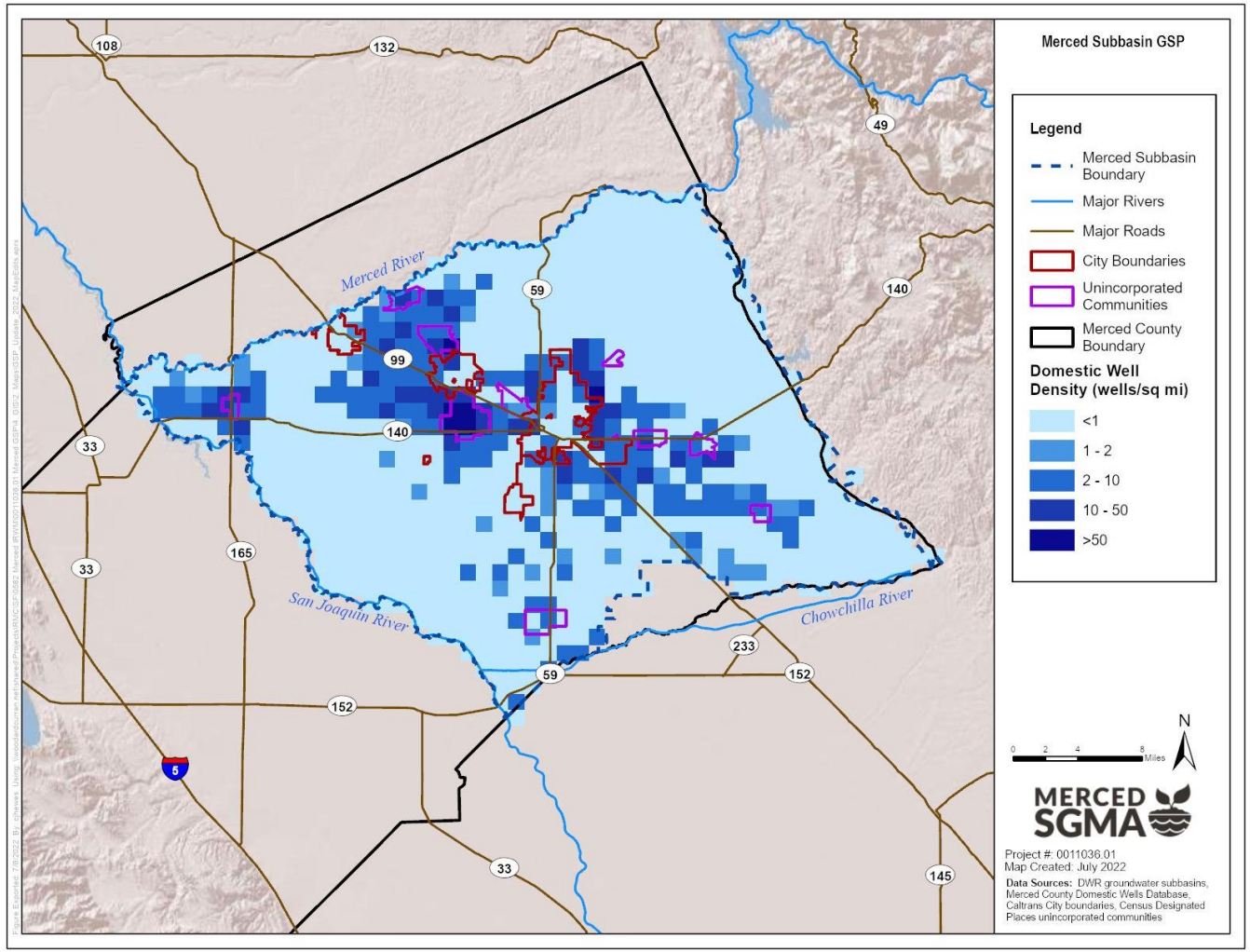
Image courtesy: Veronica Adr[illegible]

# Evaluate potential domestic wells impacts from continued overdraft

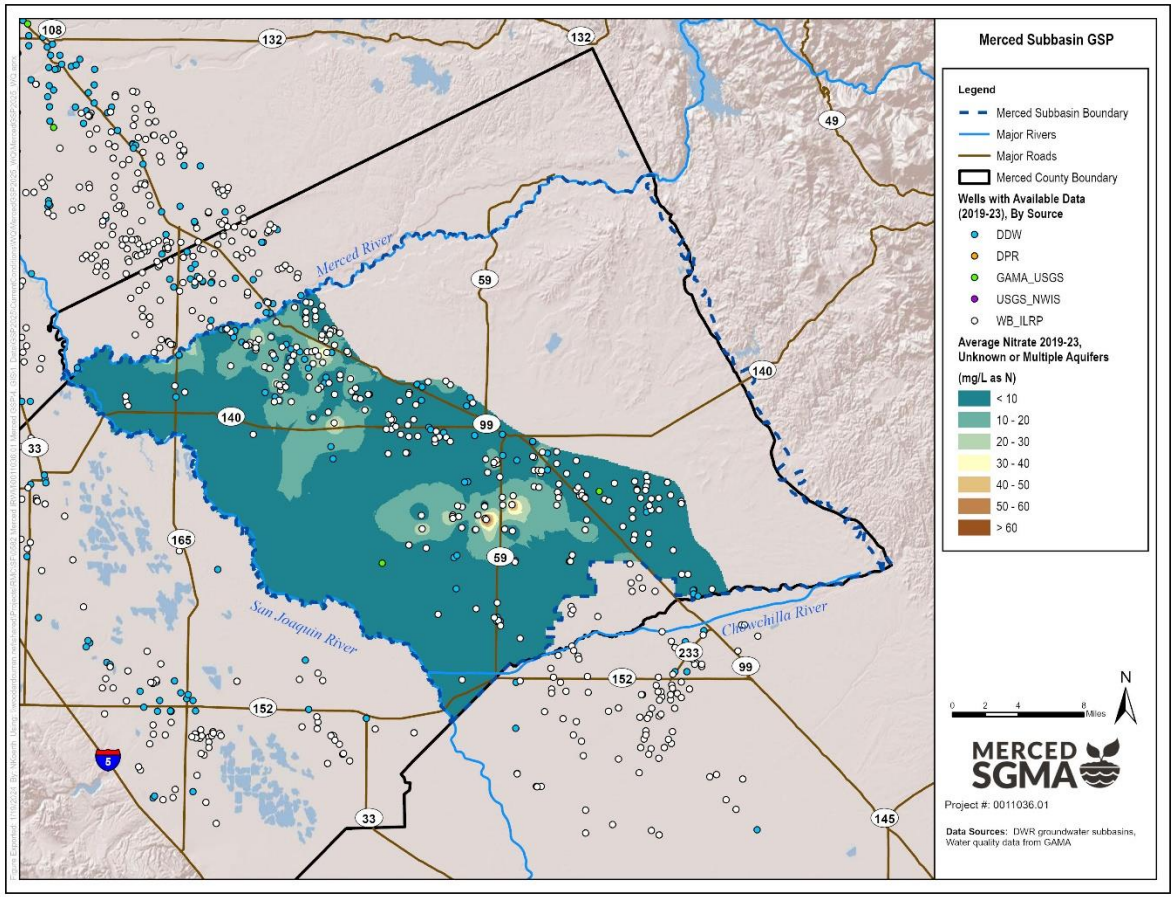
- Look at potential impacts to domestic wells due to lowering groundwater levels at each interim milestone

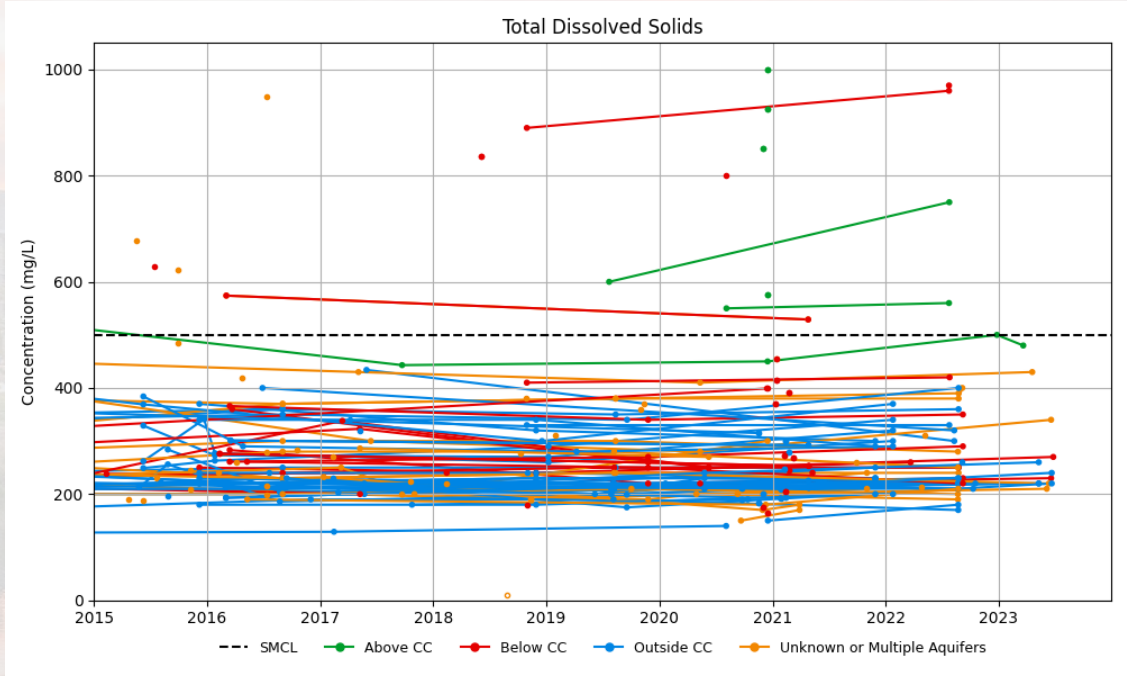



*GSP Figure 1-9: Density of Domestic Wells per Square Mile*



# Expand and update water quality analyses




- Statistical analysis of historical data does not show that lower groundwater levels result in higher water quality concentrations.
- Monitoring will continue and criteria can be reassessed over time if conditions change.

Image courtesy: Veronica Adams/AC Martin

# Other Updates

- GSAs have significantly expanded the groundwater level monitoring network to fill data gaps
- New criteria being added to address DWR's comments about groundwater storage
- Engaging with federal, state, and local agencies to discuss interconnected surface waters
- Update the groundwater model with assumptions about new and planned projects that will reduce water demand and increase recharge

# Questions, Comments, & Discussion

# Next Steps

Image courtesy: Veronica Adrover/UC Merced

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# GSP Update Schedule

**Bolded items indicate where you can get involved!**

- July – **Coordination Committee and Stakeholder Advisory Committee Meeting to review water budget outputs and discuss future projects**
- July-September – draft edits to the GSP
- July or August – **Second Public Workshop**
  - Focused on modeling results and what they tell us about actions needed to bring the basin into balance
- September - **Coordination Committee and Stakeholder Advisory Committee Meeting to review draft GSP edits**
- October 3 – November 17 (approximate) – **Public review and comment period on draft GSP update**
- December 2024 – Adoption of the GSP by GSAs
- January 2025 – Submit adopted GSP to DWR

Image courtesy: Veronica Adrover/UC Merced

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# Merced GSP
# Public Workshop

**May 22, 2024**

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**Turner Island Water District GSA-1**

Image courtesy: Veronica Adrover/UC Merced

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