

# EKI TECHNICAL PRESENTATION #31

WHITE WOLF GSA BOARD OF DIRECTORS

7 NOVEMBER 2023



# OUTLINE

- Review of DWR’s Approval of the White Wolf Groundwater Sustainability Plan (GSP) and Identified Corrective Actions
- Update on GSP implementation activities
- Projects/Management Actions (P/MAs) updates

# DWR'S APPROVAL OF THE WHITE WOLF GSP AND IDENTIFIED CORRECTIVE ACTIONS

# DWR APPROVED THE 2022 WHITE WOLF GSP!

- On 26 October 2023, DWR approved the White Wolf GSP
- Statement of Findings identifies 4 corrective actions
- Work has just begun – DWR will now grade the GSA on its progress towards reaching interim milestones and the sustainability goal



## CALIFORNIA DEPARTMENT OF WATER RESOURCES SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

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October 26, 2023

Angelica Martin  
Tejon-Castac Water District Groundwater Sustainability Agency  
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Lebec, CA 93243  
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RE: San Joaquin Valley – White Wolf Subbasin - 2022 Groundwater Sustainability Plan

Dear Angelica Martin,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the San Joaquin Valley – White Wolf Subbasin and has determined the GSP is approved. The approval is based on recommendations from the Staff Report, included as an exhibit to the attached Statement of Findings, which describes that the White Wolf Subbasin GSP satisfies the objectives of the Sustainable Groundwater Management Act (SGMA) and substantially complies with the GSP Regulations. The Staff Report also proposes recommended corrective actions that the Department believes will enhance the GSP and facilitate future evaluation by the Department. The Department strongly encourages the recommended corrective actions be given due consideration and suggests incorporating all resulting changes to the GSP in future updates.

Recognizing SGMA sets a long-term horizon for groundwater sustainability agencies (GSAs) to achieve their basin sustainability goals, monitoring progress is fundamental for successful implementation. GSAs are required to evaluate their GSPs at least every five years and whenever the Plan is amended, and to provide a written assessment to the Department. Accordingly, the Department will evaluate approved GSPs and issue an assessment at least every five years. The Department will initiate the first periodic review of the White Wolf Subbasin GSP no later than January 28, 2027.

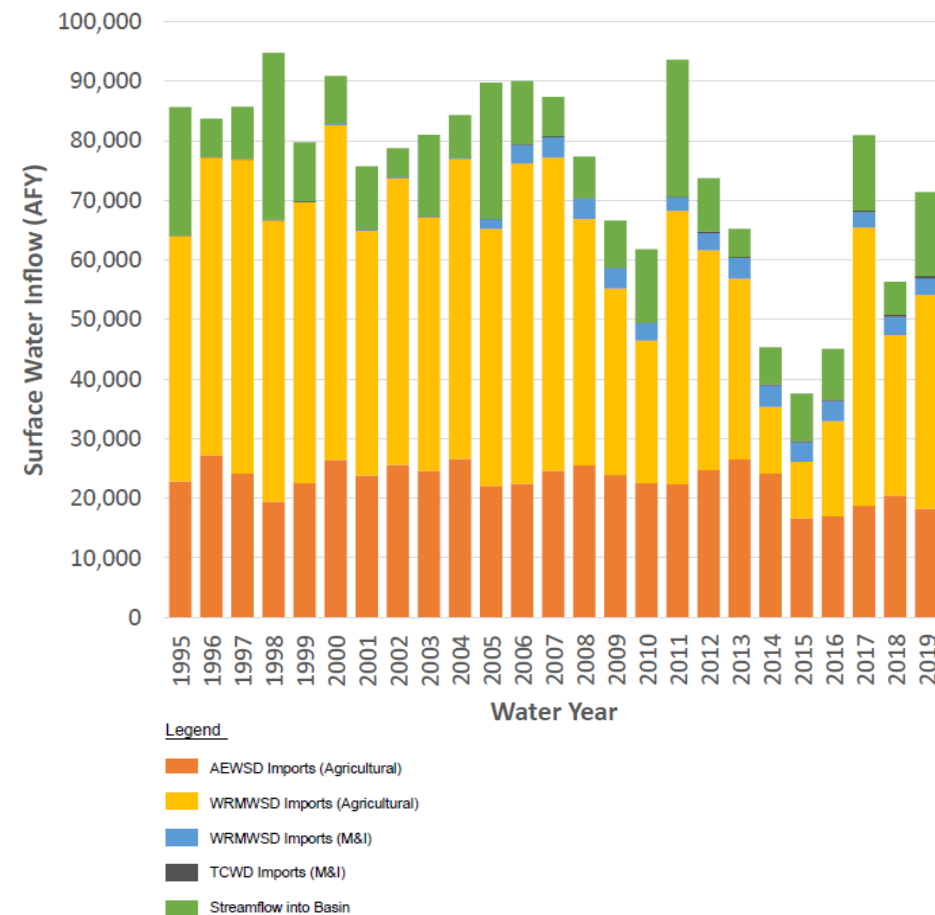
Please contact Sustainable Groundwater Management staff by emailing [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov) if you have any questions related to the Department's assessment or implementation of your GSP.

# CORRECTIVE ACTION (1):

“Develop and incorporate a projected water budget for the surface water system as required by the GSP Regulations”

- Surface water system projected water budgets under all climate changes scenarios were calculated and are available
- **Proposed response action** – include tabular and graphical summaries of projected water budgets for the surface water system

*Historical surface water inflows:*



## CORRECTIVE ACTION (2):

*“Revise the sustainable management criteria to be based on seasonal low groundwater levels to ensure potential impacts to beneficial uses and users are considered.”*

- Groundwater levels are typically at their lowest in late summer and early fall
- *“The GSA’s decision to set sustainable management criteria for the chronic decline of groundwater levels based spanning a total of two years, including two seasonal high groundwater level periods and two seasonal low groundwater level periods, instead of focusing on the time of most impacts in late summer or fall, is flawed as it likely disregards potential impacts to beneficial uses and users from seasonal variations. Under this management decision, even if the GSA successfully maintains spring groundwater levels within the historical range, impacts to beneficial uses and users that occur during any other times of the year (as groundwater levels typically decline) appear to not be considered.”*
- **Proposed response action** – consider revising the UR definition to be based solely on Fall groundwater lows.

## CORRECTIVE ACTION (3):

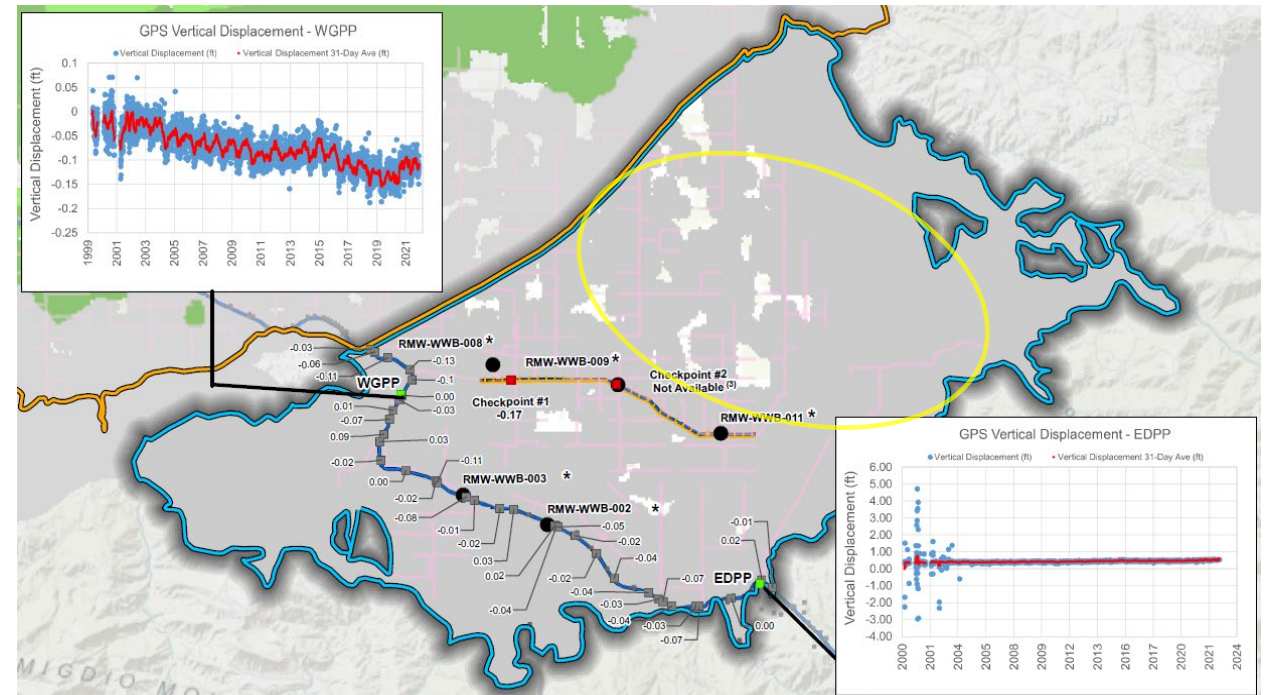
*“Establish sustainable management criteria for land subsidence based on direct measurements of land elevation changes to assess and confirm that no significant and unreasonable land subsidence is occurring.”*

- GSP uses groundwater levels as proxy for the land subsidence SMCs
- DWR staff found land subsidence and groundwater levels are not exactly or necessarily linear across the Basin
- **Proposed response action** – Determine appropriate RMS (e.g., the Basin benchmarks, GPS monitoring stations, and DWR checkpoints) for setting land subsidence SMCs, and develop land subsidence SMCs specified as a subsidence rate and extent at appropriate RMS. Leverage SOKR work and coordination with CASP to develop appropriate subsidence SMCs.

# CORRECTIVE ACTION (4)

“Expand the land subsidence monitoring network to provide sufficient coverage of the Subbasin. The GSA may consider the use of additional GPS stations, extensometers, or publicly available remote sensing data (e.g., InSAR) to expand the land subsidence monitoring network in the Subbasin..”

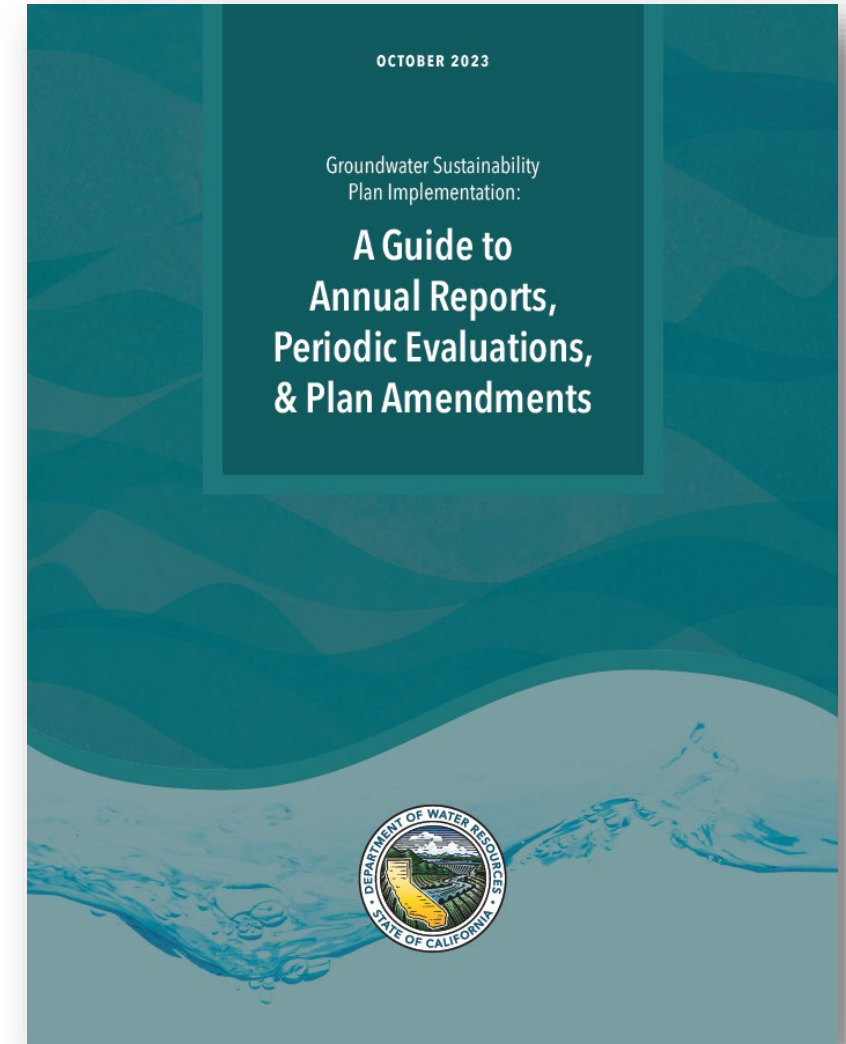
- (1) Lack of subsidence sustainability criteria monitoring proposed in the northern and northeastern portions of the GSA
- (2) The GSP states that the Department checkpoint data will be obtained annually, but does not specify what time of year the data will be used from
- **Proposed response action** – (1) Incorporate additional GPS stations and publicly available remote sensing data (InSAR) into monitoring network. (2) Provide information on data collected from DWR CASP.





# IMPLICATIONS OF DWR'S IMPLEMENTATION GUIDE

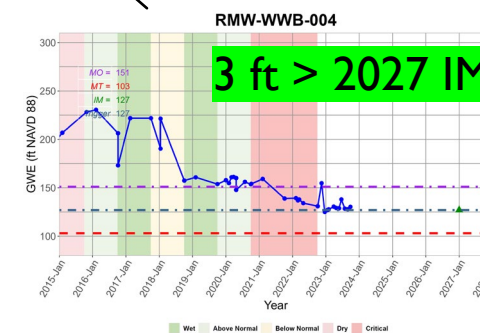
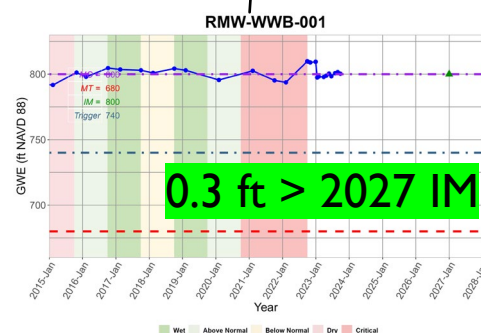
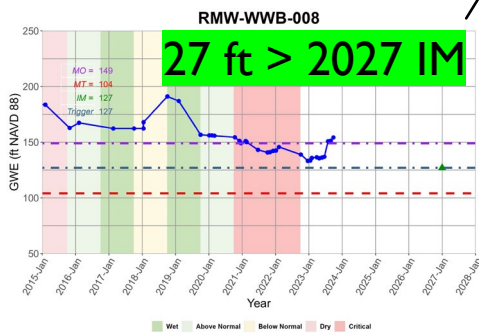
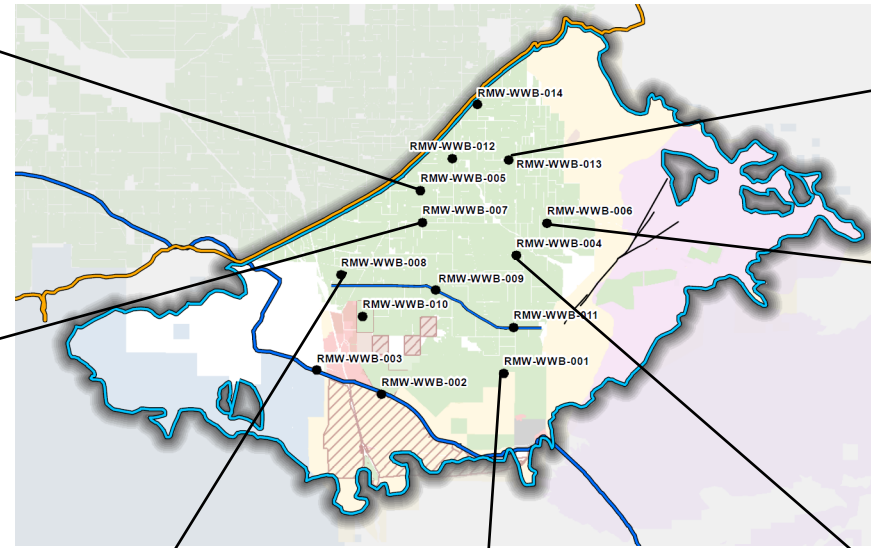
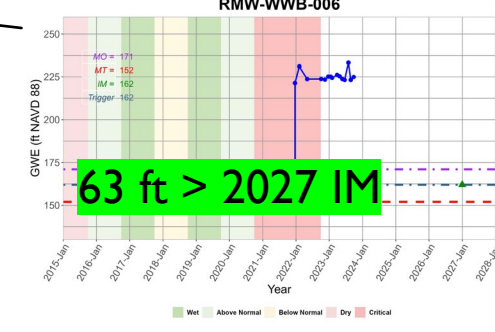
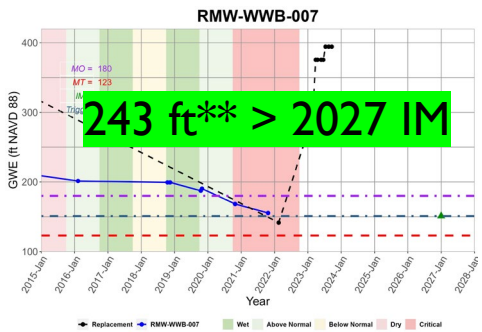
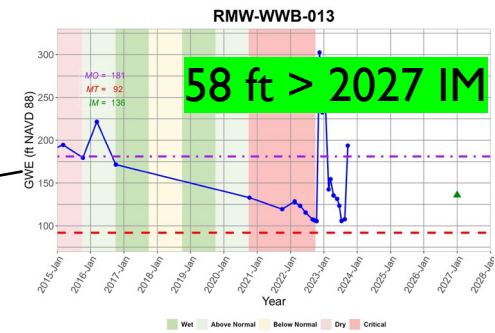
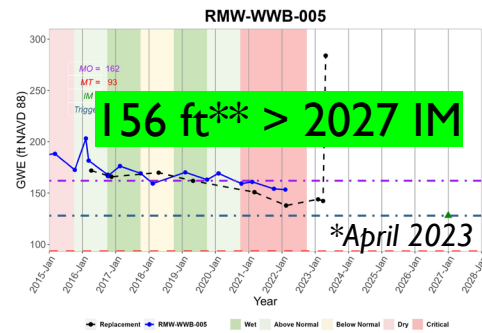
- Key considerations for the **2027 Update** include:
  - Status of groundwater conditions and progress toward meeting IMs and MOs
  - Progress on corrective actions
  - Describe advancement of P/MAs (including benefits)
  - Description of unforeseen challenges with development or implementation of P/MAs
  - Explanation of trends seen in data collected over submitted Annual Reports
  - Establish whether a GSP amendment is needed accompanied by a high-level description of changes as well as rationale for changes
  - Recommended outline: (1) Executive Summary (2) New information collected, (3) Status of P/MAs, (4) Basin Setting based on new information or changes in water use, (5) Monitoring Networks, (6) GSA authorities and enforcement actions, (7) Outreach, Engagement, and Coordination with other agencies, (8) Other Information, and (9) Summary of Proposed or Completed Revisions to Plan Elements



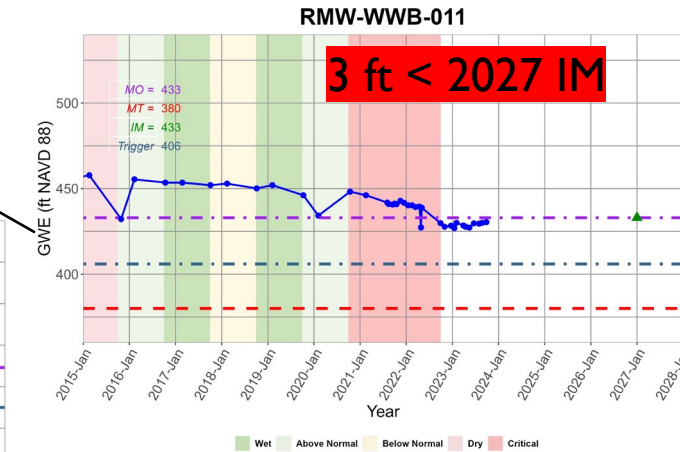
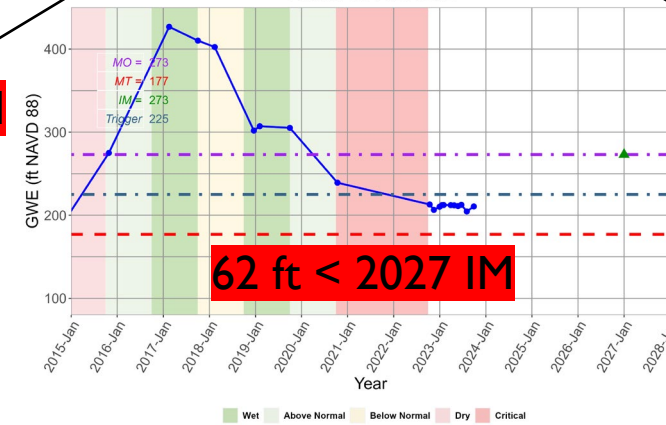
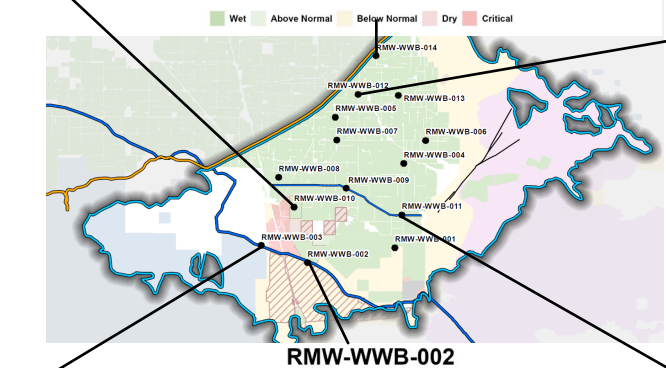
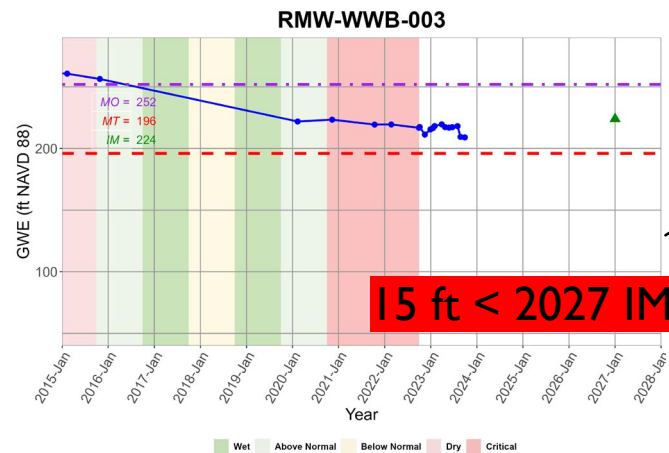
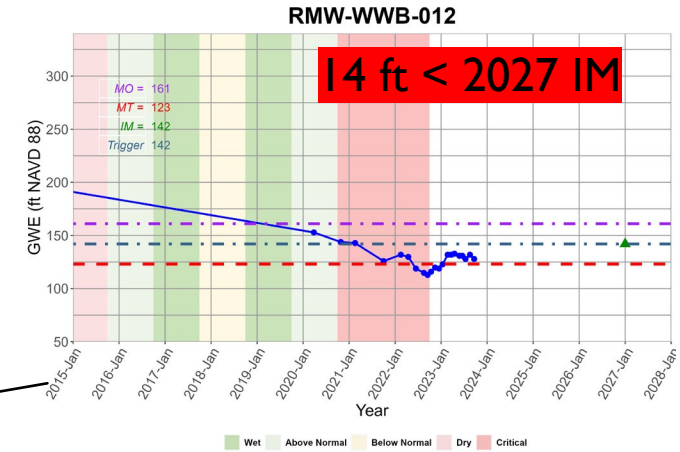
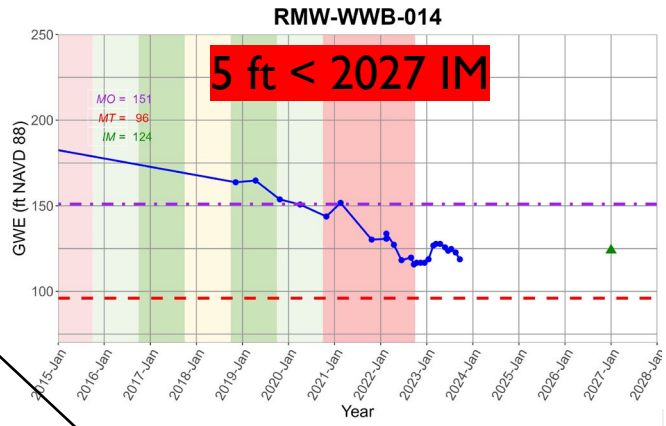
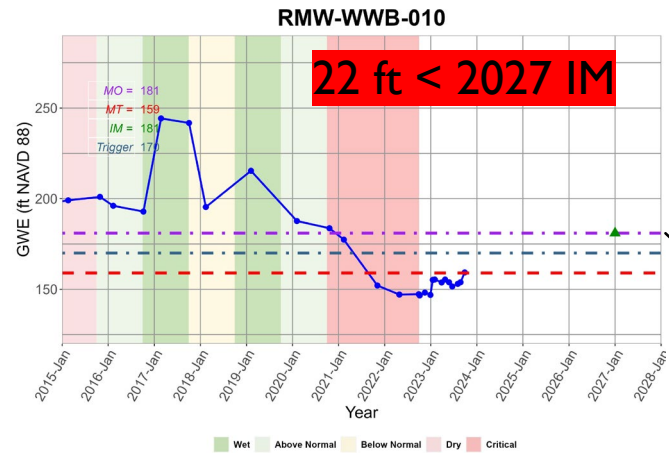
# NEXT STEPS

- Recommend GSA engages with DWR to directly walk through proposed response actions to corrective actions
- GSA will need to demonstrate that the initiated P/MAs are keeping the Basin on track to reaching sustainability goal
- Compare groundwater conditions against SMCs and 2027 interim milestones
- Consider revisions to SMCs based on recently collected data

# PROGRESS TOWARDS INTERIM MILESTONES – ABOVE 2027 IM AS OF OCTOBER 2023

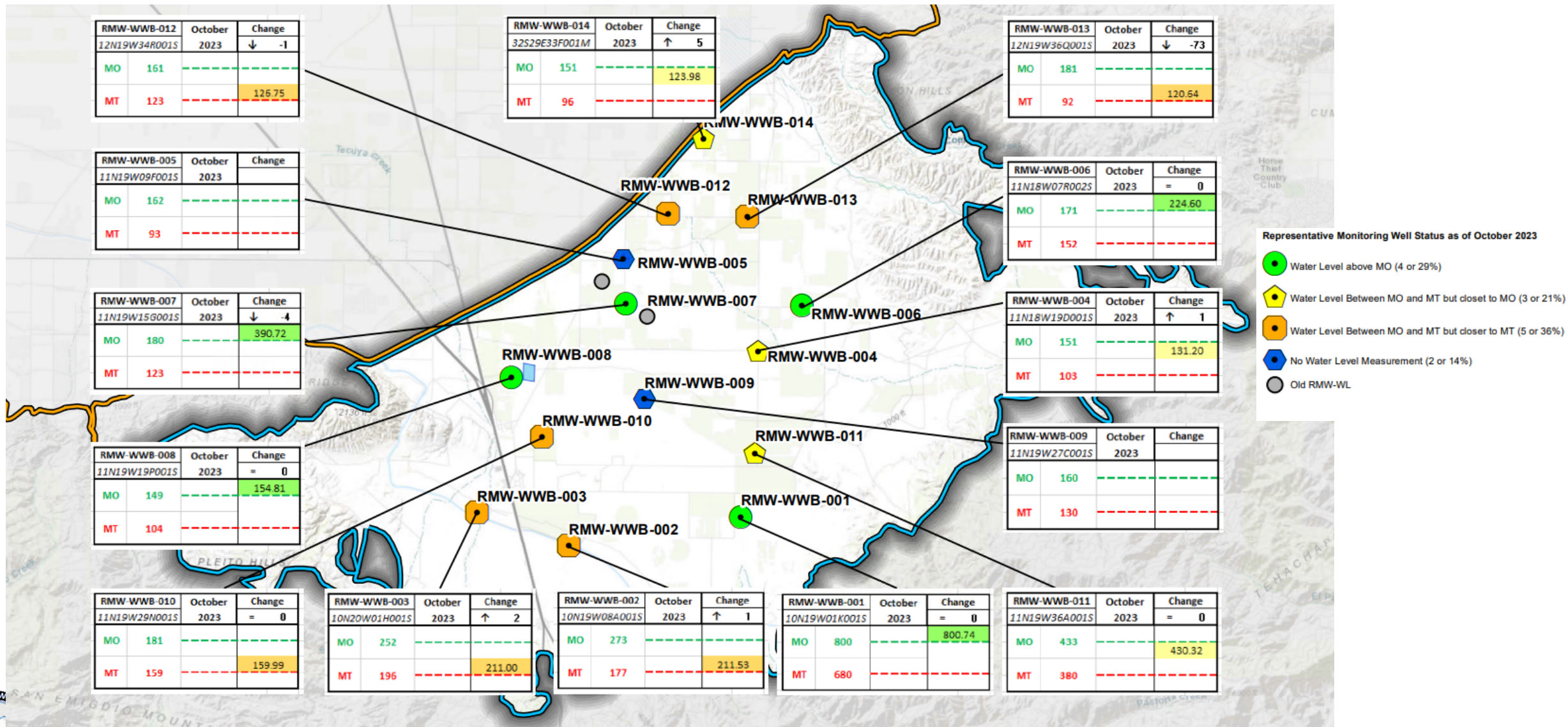


# PROGRESS TOWARDS INTERIM MILESTONES – BELOW 2027 IM

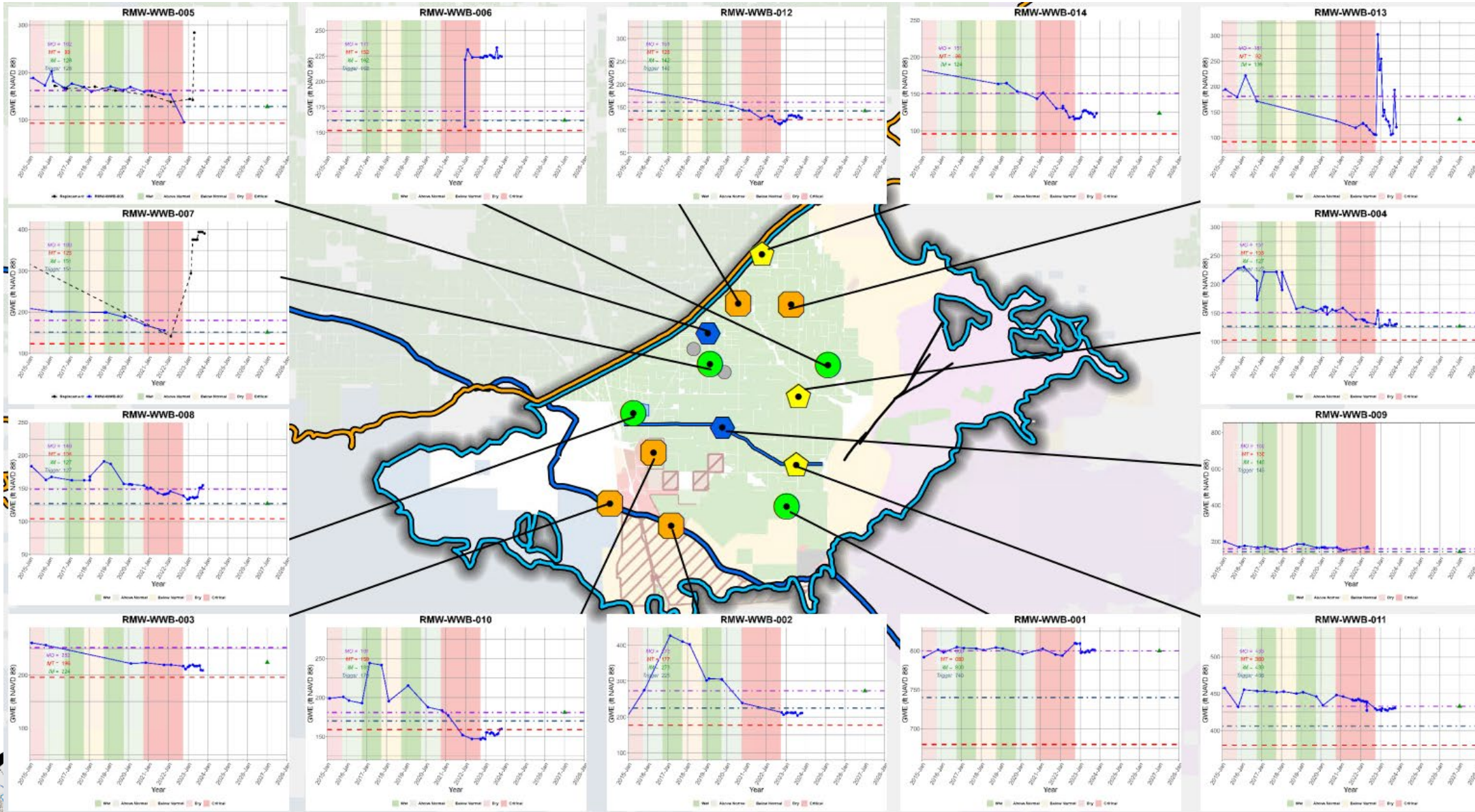


# GSP IMPLEMENTATION UPDATES

# OCT. 2023 MEASUREMENTS COMPARED TO SMCs



# RMW-WL HYDROGRAPHS



**Representative Monitoring Well Status as of October 2023**

- Water Level above MO (4 or 29%)
- ⬠ Water Level Between MO and MT but closer to MO (3 or 21%)
- ⬠ Water Level Between MO and MT but closer to MT (5 or 36%)
- ⬠ No Water Level Measurement (2 or 14%)
- Old RMW-WL

**Land Use**

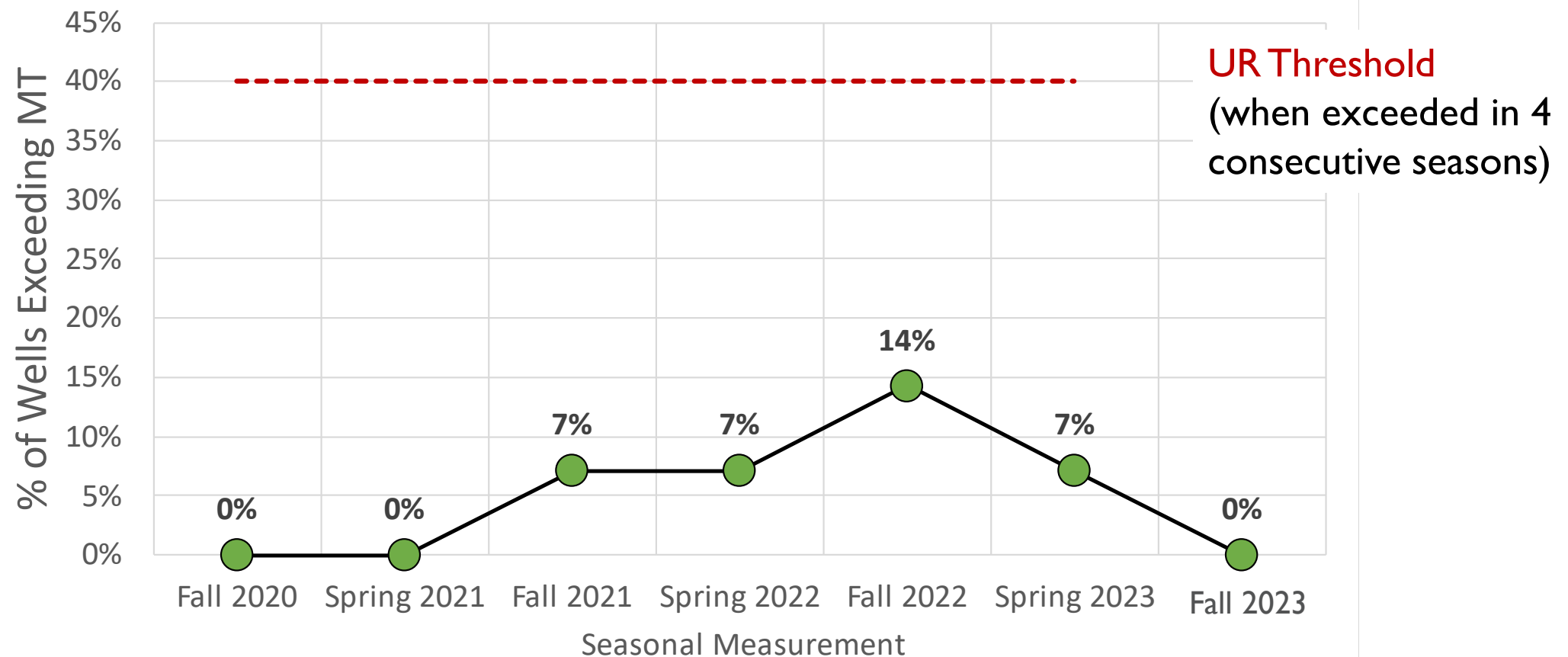
- Agricultural Land
- Developed
- Grazing
- Mining
- Oil Field
- Conservation Easement Area
- California Protected Areas
- Proposed Grapevine Development
- Mettler Recharge Project

**Hydrograph Components**

- Measurable Objective
- Trigger Threshold
- Minimum Threshold
- Groundwater Elevation

# UNDESIRABLE RESULTS ARE NOT YET OCCURRING

- UR definition: when 40% or more of RMWs exceed MTs over 4 consecutive seasonal measurements

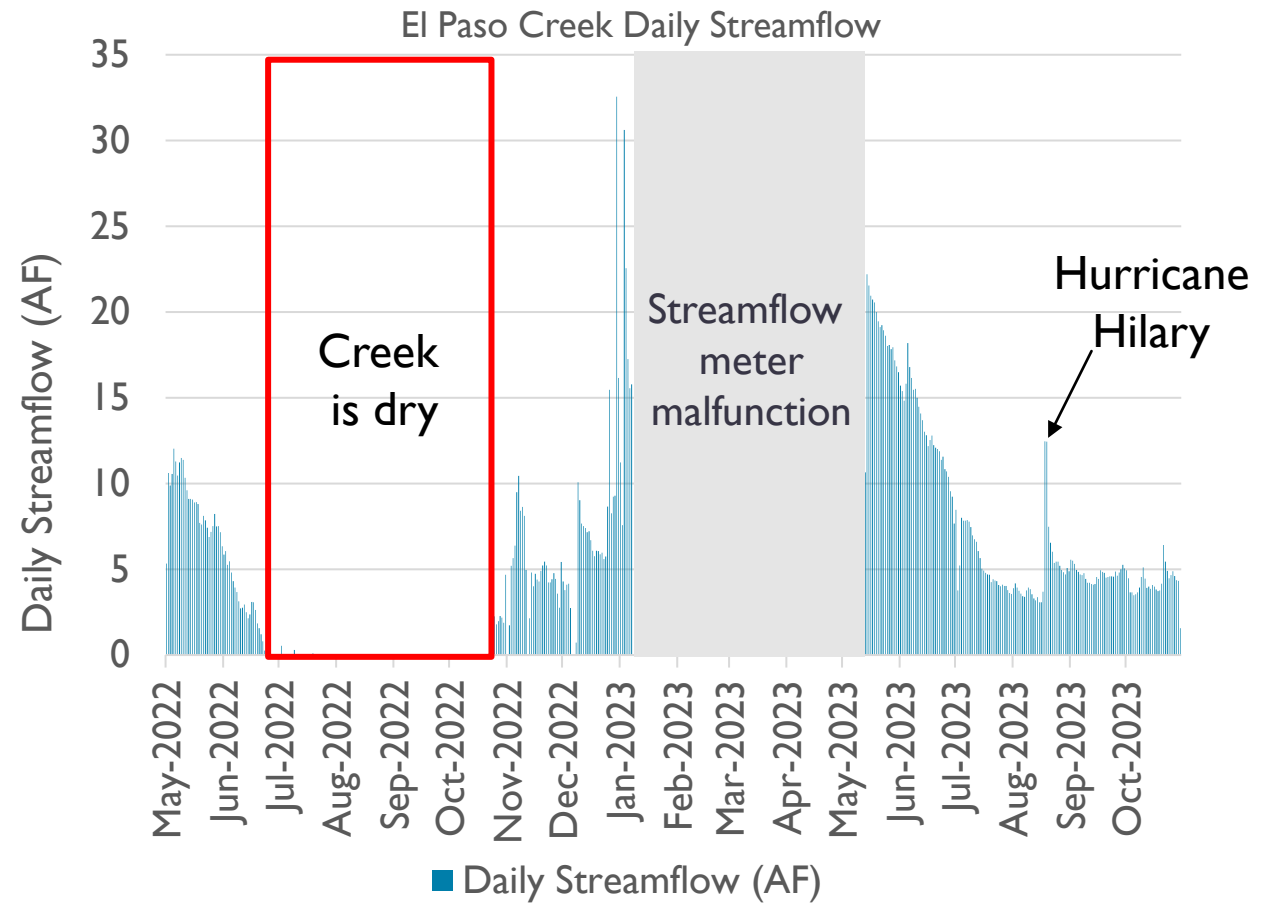




# EL PASO CREEK STREAMFLOW MEASUREMENTS



- Meter measures suggest stream started flowing in mid-Oct 2022, and continues to flow
- Data will be used to improve the modeled estimates of surface water inflows to the Basin

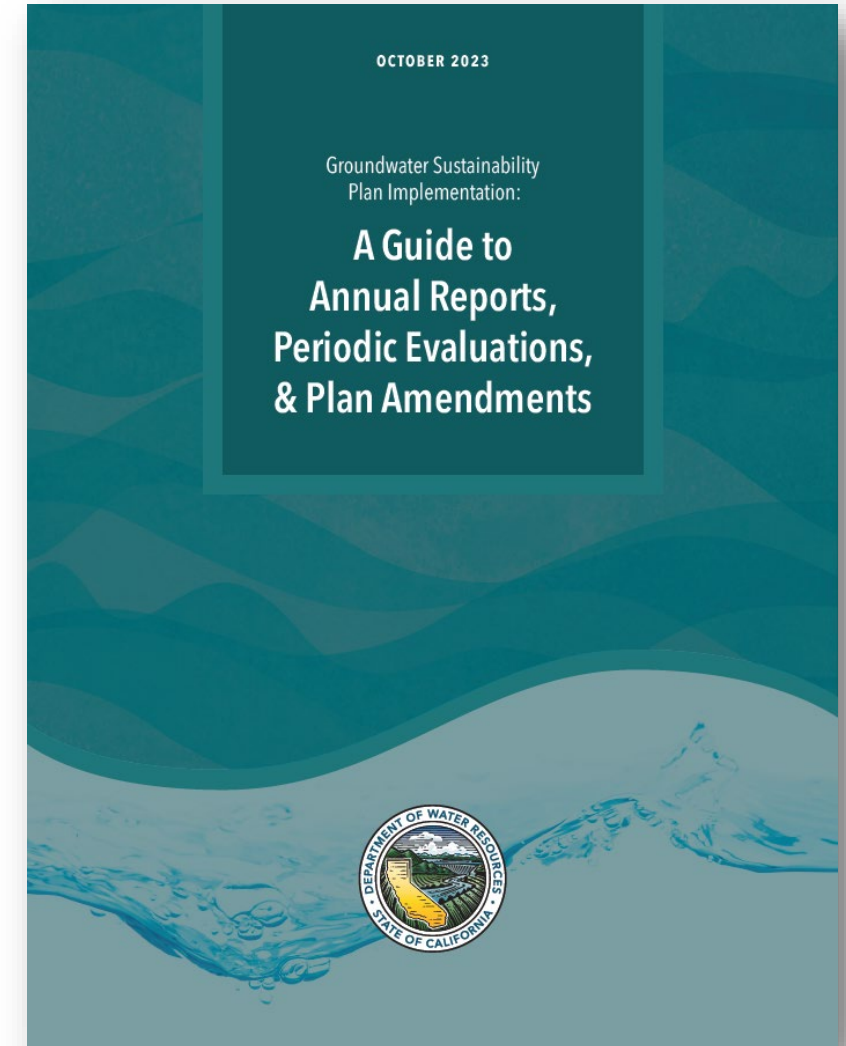


# NEXT STEPS

- Upload Fall 2023 groundwater levels to DWR portal (due to DWR 12/31)
- Finish extending White Wolf Groundwater Flow Model (WWGFM) through Water Year 2023
- Begin drafting Water Year 2023 Annual Report (due to DWR 4/1/24)

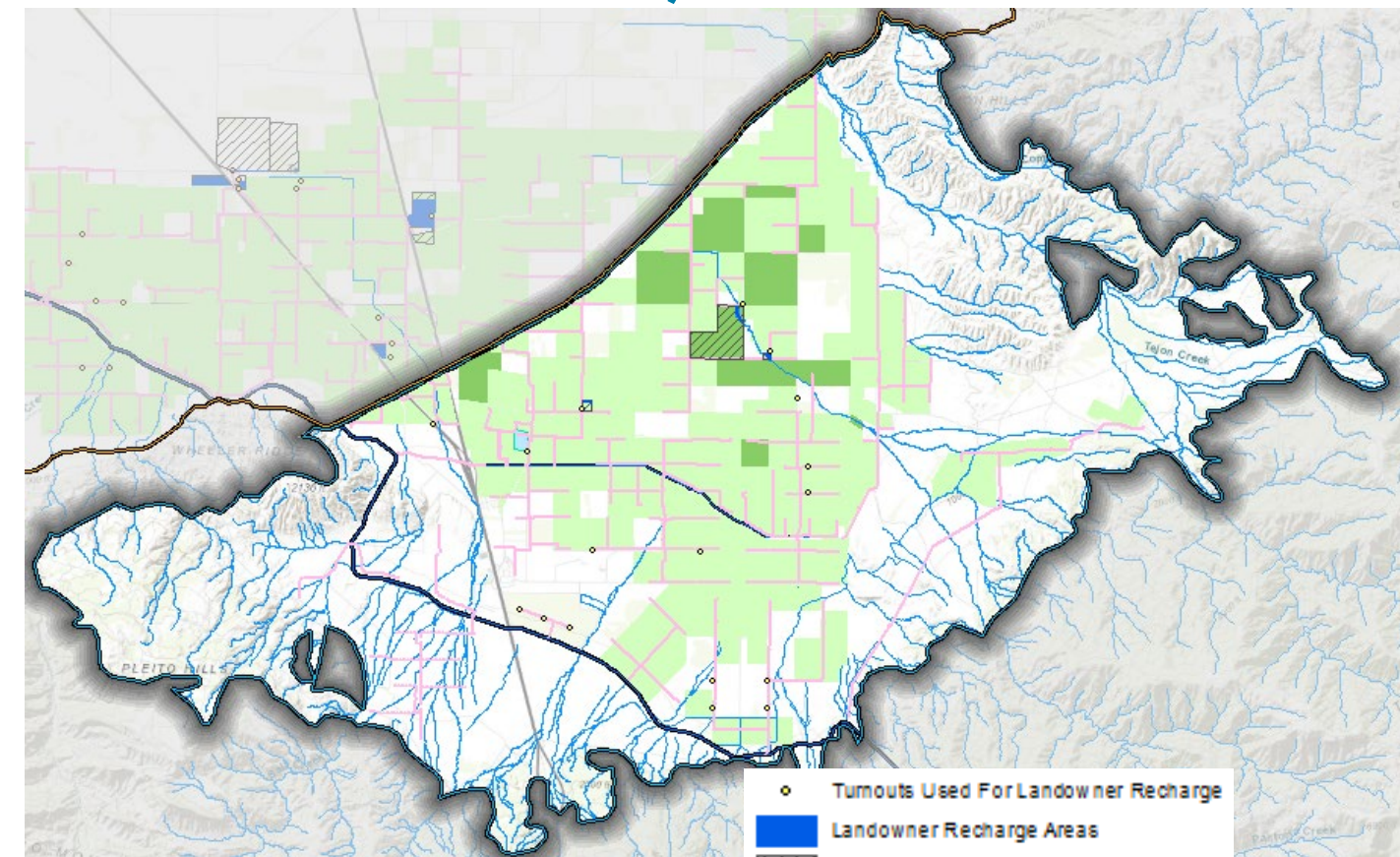
# IMPLICATIONS OF DWR'S IMPLEMENTATION GUIDE

- Key updates/changes for the **Annual Report** include:
  - Potentially restructure tables to match those presented in the Guide
  - Describe improvements to metering measurements
  - Expand on P/MA descriptions, including discussion of any adverse impacts on various sustainability indicators, adjacent groundwater basins, or beneficial uses and users of the Basin
  - Add new section to discuss progress made on addressing corrective actions in DWR's determination letter



# P/MA UPDATE

# LANDOWNER RECHARGE PROGRAMS HAVE APPLIED >12,000 AF IN 2023



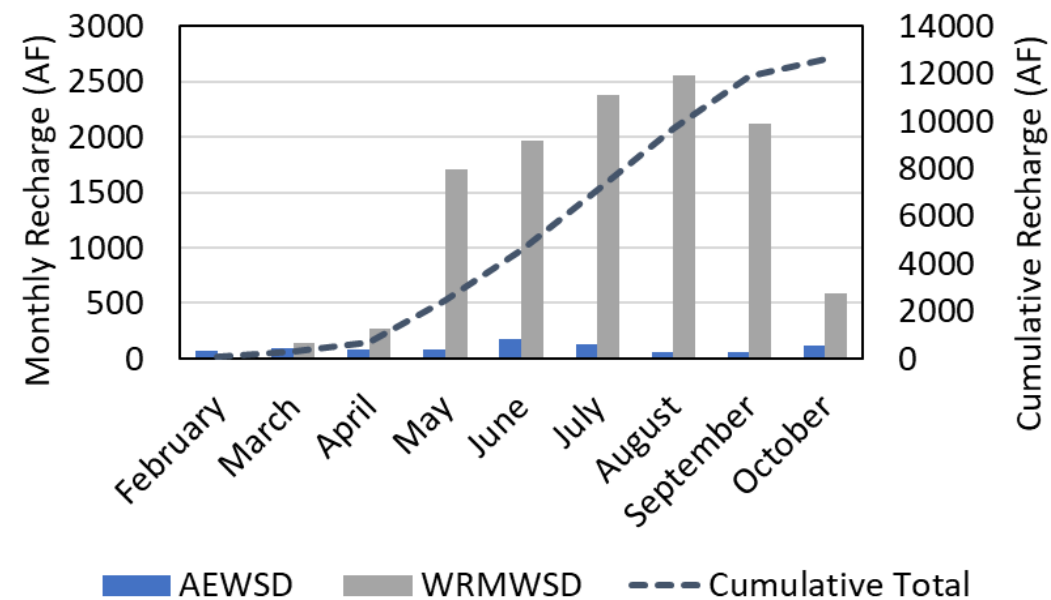
### Legend

#### Groundwater Subbasin

- Kern County (DWR 5-022.14)
- White Wolf (DWR 5-022.18)

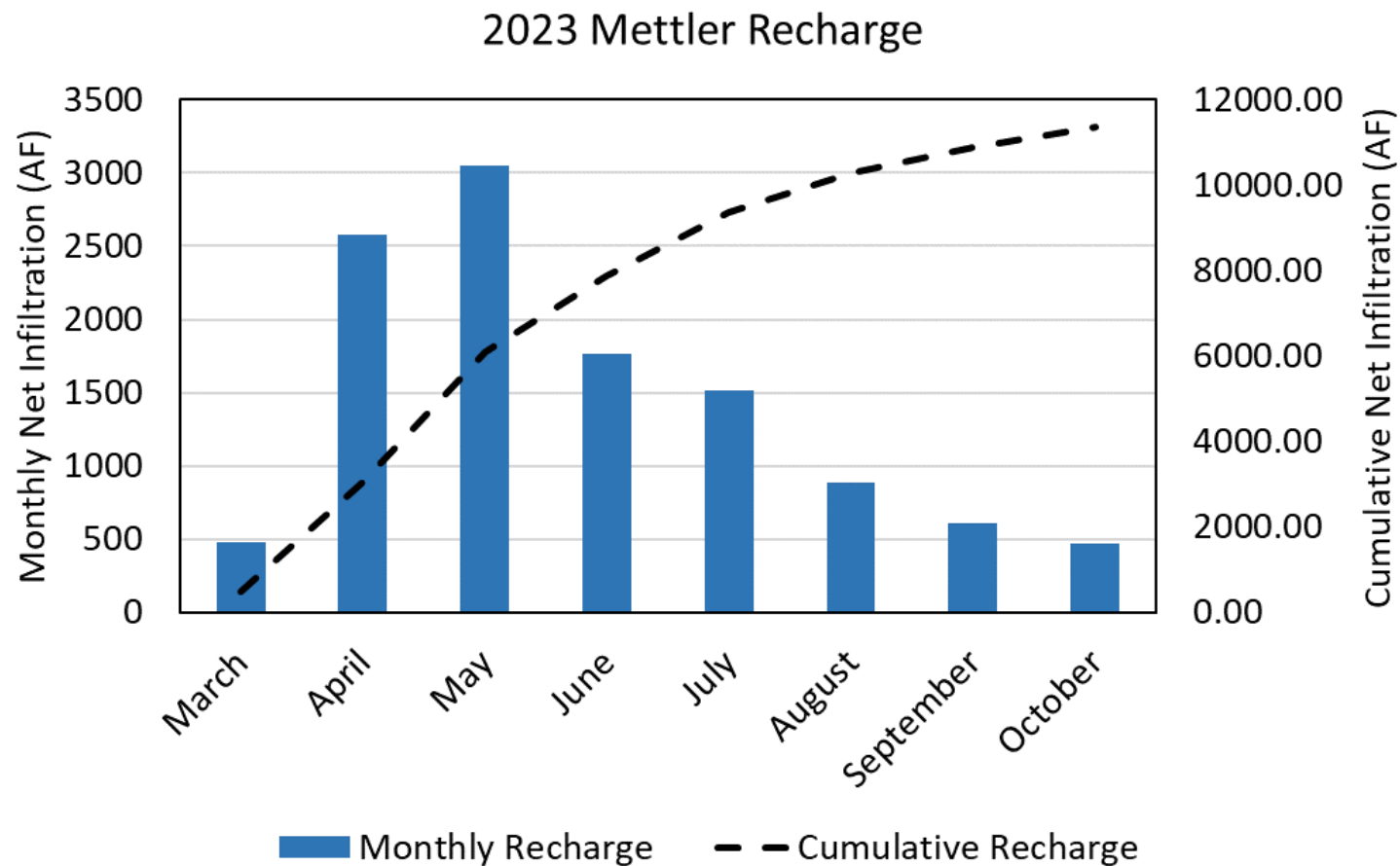
- California Aqueduct
- Mettler Recharge Facility
- Surface Water Service Area
- New In-Lieu Service Area

### 2023 Landowner Recharge in White Wolf

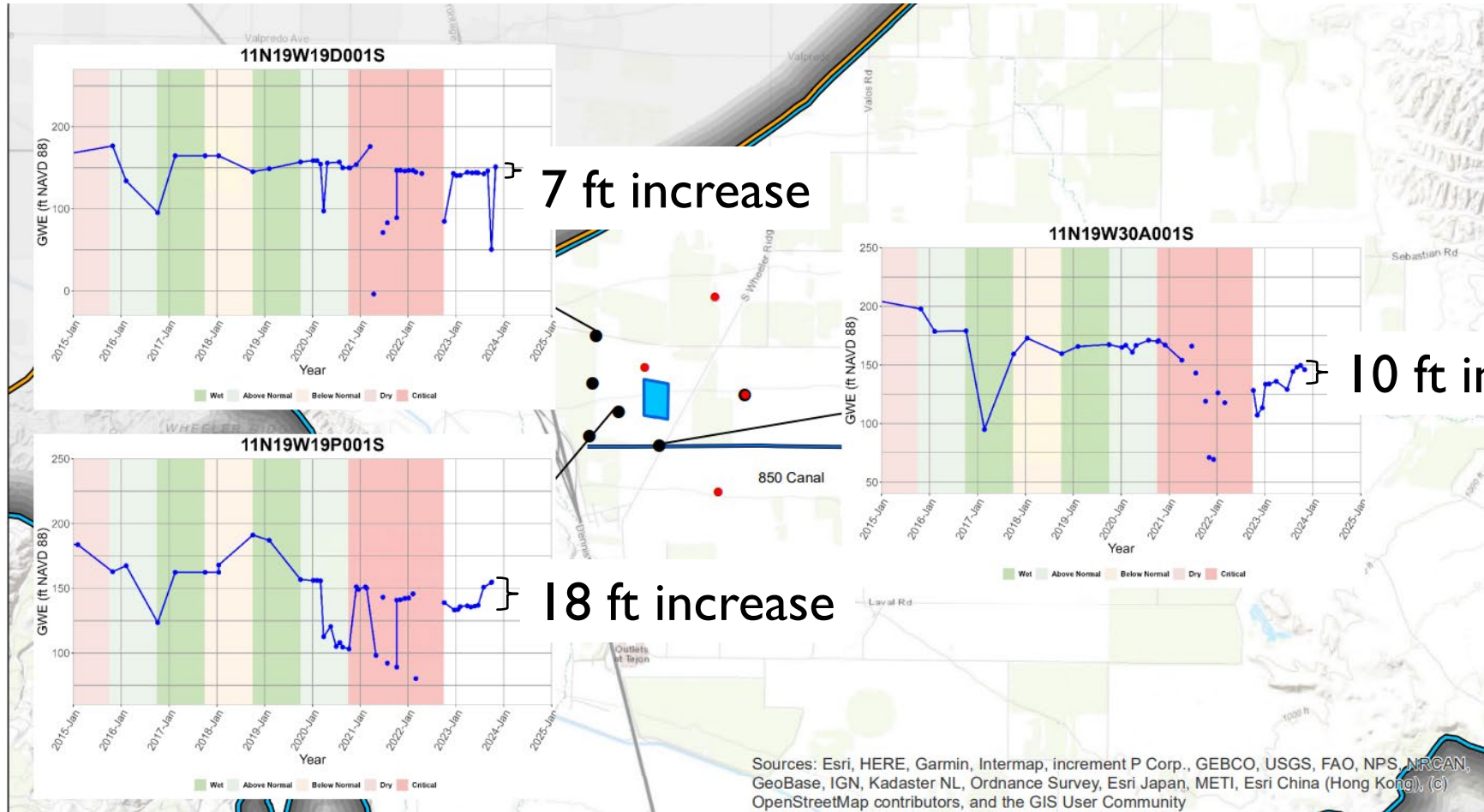


# APPROX. 11,400 AF INFILTRATED AT METTLER FACILITY SINCE MARCH 2023

- Average infiltration rate 1.16 ft/day



# RECENT GROUNDWATER LEVEL TRENDS NEAR METTLER RECHARGE FACILITY

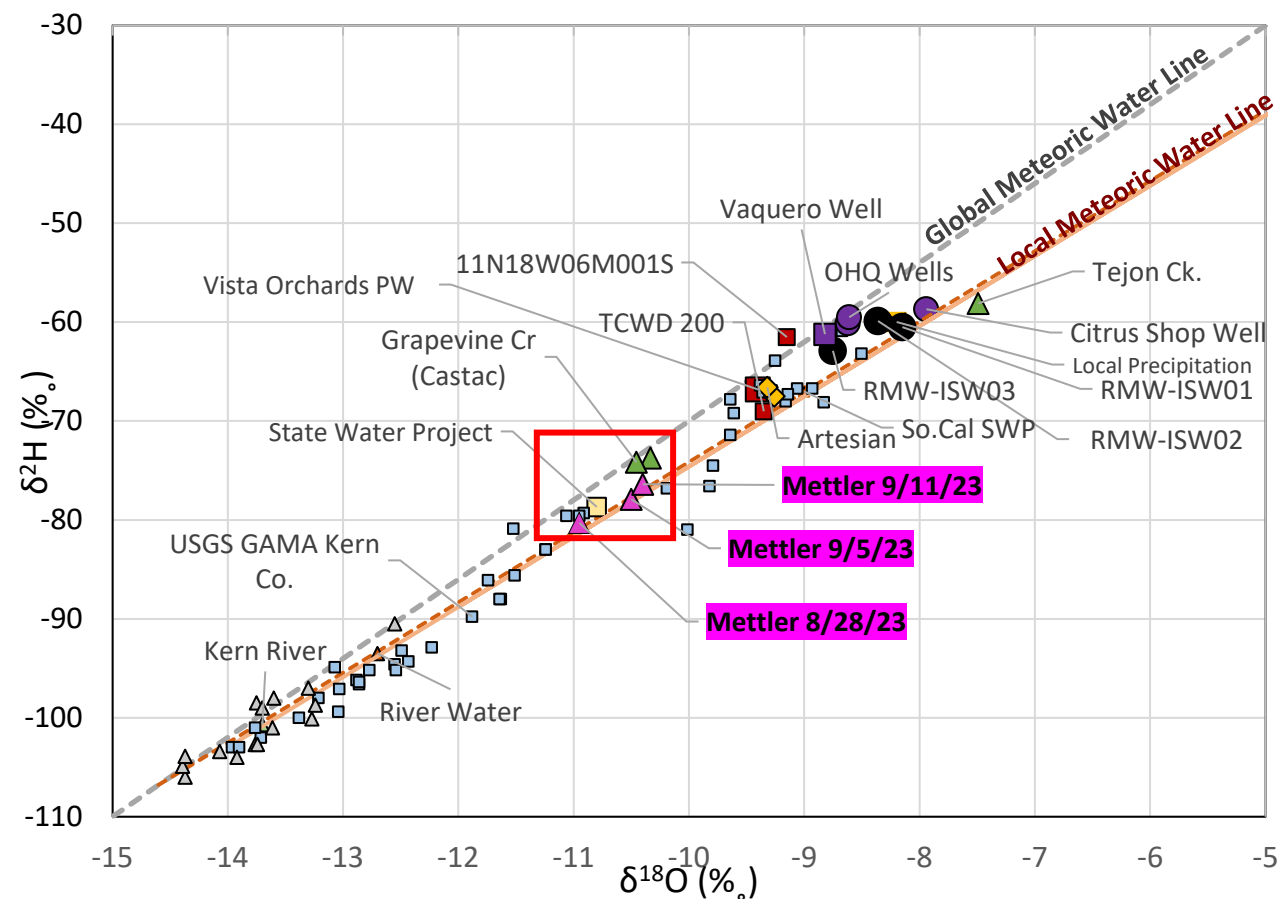


- Increase in nearby water levels since March 2023



# RESULTS FROM ISOTOPE SAMPLING SHOW INFLUENCES FROM MIXED SOURCES

- Isotopic signature shows similarity to State Water Project, Grapevine Creek, and various local groundwater sources
- Least similar to wells south of the Springs Fault (RMW-ISWs, shallow domestic wells) and Tejon Creek





# P/MA COMMITTEE MEETING UPDATE

- October 12<sup>th</sup>
  - Reviewed leave behind percentages and considerations from other GSAs' policies and discussed WWB-specific considerations:
    - Travel time and outflow across the White Wolf Fault
    - Existing district policies
    - Does the WWGSA want to encourage recharge?
    - Any percentage should be justified through a technical study

# LEAVE BEHIND CONSIDERATIONS

**Analysis:** Amount assessed against gross recharge volume to account for **subsurface outflows, non-recoverable supply, and subbasin sustainability.**

## White Wolf GSA specifics:

1. Subsurface outflows to neighboring Kern County Subbasin.
2. Non-recoverable supply trapped in unsaturated zone (i.e., recharge water that does not reach groundwater due to subsurface pore space composition and depth to groundwater)
3. Subbasin sustainability protecting groundwater storage and supporting GSA management efforts (i.e., offset long-term storage decreases)



# COMPARISON FIGURES – LANDOWNER PROGRAMS

District/ GSA	Leave Behind
Arvin Edison Water Storage District	Not established (financial incentive only)
Wheeler-Ridge Maricopa Water Storage District	Not established
Madera County GSA (Emergency recharge policy)	25%
Shafter-Wasco Irrigation District	6-100% depending on source and owner of water
Lower Tule River Irrigation District GSA	10-25% depending on facility ownership
North Fork Kings GSA	10%
Porterville Irrigation District	10-30% depending on source and location

- Considerations typically include water supply source & place of use
- May require metering and reporting to the GSA/District

# COMPARISON FIGURES – BANKING FACILITIES

Bank	Status	Leave Behind	SubBasin
Kern Water Bank	Active	10%: 6% unavoidable losses, 4% overdraft correction	Kern County
Mettler	Active	10% after evaporation	White Wolf
Semitropic	Active	10%	Kern County
AVEK “High Desert”	Proposed	10%	Antelope Valley
Aquaterra/McMullin	Proposed	10%	Delta Mendota
North Fork Kings GSA	Proposed	10%	Kings
Rainbow IX (Terra Bella)	Proposed	10 to 30%	Tule
NSJWCD "Dream" Project	Active	50%	Eastern San Joaquin
Rosedale-Rio Bravo	Active	50%	Kern County
Buena Vista WSD	Proposed	25 to 75%	Kern County

- Considerations typically include negotiations with potential partners and supply availability