



**Stanislaus & Tuolumne Rivers Groundwater Basin Association**  
**Groundwater Sustainability Agency**  
1231 11<sup>th</sup> Street | Modesto, CA 95354  
Email: strgba@mid.org

## **STRGBA GSA AGENDA**

**May 22, 2024 (1:30 p.m. – 3:00 p.m.)**

**Webinar Digital Platform or Phone Meeting**

<https://us02web.zoom.us/j/88131892224>

By phone: 1-669-900-9128

Webinar ID: 881 3189 2224

### **PUBLIC PARTICIPATION**

**The public may participate in this meeting in the three ways described below.**

Instructions for Participating in STRGBA GSA & Technical Advisory Meeting via Zoom Webinar or Phone

#### **On your desktop/iPad or tablet/laptop:**

1. To join the webinar, click the link published in the Agenda for the current meeting about 5 minutes before the webinar begins.
2. Follow the on-screen instructions to install and/or launch the Zoom application.
3. If prompted, enter the Webinar ID published in the Agenda.
4. All public attendees will enter the meeting muted.
5. If you wish to speak under Business from the Public, or after the Chairman calls for Public Comment, click on the “Raise Hand” button to request to speak.

#### **On your phone:**

1. To attend the meeting by phone, call the number published in the Agenda for the meeting.
2. Enter the Webinar ID published in the Agenda, then hit the # symbol.
3. All public attendees will enter the meeting muted.
4. If you wish to speak under Business from the Public, or after the Chairman calls for Public Comment, press \*9 on your phone to “Raise Hand” or simply request to speak.

**In person:** Oakdale Irrigation District 1205 E. F Street, Oakdale



**Stanislaus & Tuolumne Rivers Groundwater Basin Association**  
**Groundwater Sustainability Agency**  
1231 11<sup>th</sup> Street | Modesto, CA 95354  
Email: [strgba@mid.org](mailto:strgba@mid.org)

1. Call to Order/Welcome and Introductions  
(Four agencies are needed for a quorum)
2. Business from the Public  
Who: Public  
Expected Outcome: Interested persons are welcome to introduce any topic within the Agency's jurisdiction. Matters presented under this heading may be discussed but no action will be taken by the Agency at this meeting. It is not required, but speakers may provide their name and address. Public Comments will be limited to five minutes per speaker.
3. Topic: Approve 3/27/2024 Meeting Minutes [[Action Item](#)]  
Who: Eric Thorburn, Committee  
Expected Outcome: Approval
4. Topic: Approve MOU for GW Sustainability Planning, Reporting, Studies, Mutual Aid, and Support Services [[Action Item](#)]  
Who: Jesse Franco, Committee  
Expected Outcome: Approval
5. Topic: Water Quality/ Interconnected Surface Water/ Well and Land Subsidence Impacts Analysis Results  
Who: Todd Groundwater, Committee  
Expected Outcome: Discussion
6. Topic: Well Mitigation Components  
Who: Todd Groundwater, Committee  
Expected Outcome: Discussion
7. Topic: GSP Water Balance Review – Projects and Management Actions Overview  
Who: Woodard & Curran, Committee  
Expected Outcome: Discussion
8. Topic: Management Actions Commitment Resolution/MOU Components & Schedule  
Who: Eric Thorburn, Committee  
Expected Outcome: Discussion

[City of Modesto](#) | [City of Oakdale](#) | [City of Riverbank](#) | [City of Waterford](#)  
[Modesto Irrigation District](#) | [Oakdale Irrigation District](#) | [Stanislaus County](#)



**Stanislaus & Tuolumne Rivers Groundwater Basin Association**  
**Groundwater Sustainability Agency**  
1231 11<sup>th</sup> Street | Modesto, CA 95354  
Email: [strgba@mid.org](mailto:strgba@mid.org)

9. Next Meeting

June 12, 2024, at 1:30 p.m.

10. Committee Comments/Reports



## MEETING MINUTES

**March 27, 2024 (1:30 p.m. – 3:00 p.m.)**

The meeting was called to order at 1:33 p.m.

### 1. Welcome and Introductions

The following members of the Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency (STRGBA GSA) attended either in-person or via Zoom.

#### **GSA Member Attendees:**

Modesto Irrigation District (MID): Jesse Franco  
Oakdale Irrigation District (OID): Eric Thorburn  
Stanislaus County: Christy McKinnon  
City of Waterford: Michael Pitcock  
City of Oakdale: Ian Sather

#### **Other Attendees:**

Liz Elliott  
Tim Barahona  
Jose McEra  
Gordon Enas  
Larry Byrd  
Dominick Amador  
Rob Kostlivy  
David Avila  
Dominick Amador  
Stacy Henderson  
Ali Stevens  
John Mauterer  
Janice Keating  
Hilary Reinhard  
Louis Brichetto Sr.

### 2. Business from the Public

Mr. Avila expressed concern about the State's control over the groundwater.

### 3. Approve 3/13/2024 Meeting Minutes [Action item]

Franco moved, 2<sup>nd</sup> by Sather to approve the 3/13/2024 meeting minutes.

Note: Julia Stornetta requested to be added to the list of attendees for the March 13, 2024, meeting minutes. Meeting minutes will be revised and uploaded to the website.



#### **4. Approve Water Year 2023 Annual Report**

Sather moved, 2<sup>nd</sup> by McKinnon to approve the water year 2023 annual report.

#### **5. GSA Ad Hoc Committee**

Thorburn explained that the committee will be formed to work closely with the consultant for the Groundwater Sustainability Plan (GSP) amendments.

- Stevens inquired about the accessibility of the ad hoc committee meetings to the public, to which Thorburn replied they are intended to be for internal work sessions before public presentations. Stevens then asked if there would be updates on the GSP amendment progress before submission. Thorburn confirmed there will be updates, mentioning a potential well mitigation plan to address comments received.

#### **6. Long-Term Groundwater Replenishment Program**

Franco informed the group about the approval of the LT-GRP and the conclusion of the CEQA review. MID will host two workshops on April 23 and 24 at 5:30 p.m.

- McKinnon inquired about participation in the program. Franco mentioned that four applications have been submitted.
- Avila inquired about the strategy for returning groundwater levels to historical norms and requested information on those historical elevations. Franco explained that presently, the state doesn't supply surface water. However, through this program MID has allocated 60,000 acre-feet for use outside of its boundaries but within the Modesto subbasin.
- Brichetto expressed his aspiration to implement a comprehensive basin-wide approach.
- Stevens inquired about the number of applicants, with Franco indicating approximately 2,000 af. She asked if there was discussion regarding the concern over low participation, with Franco highlighting informational efforts through the LT-GRP fact sheet and upcoming workshops. Stevens mentioned a recent ruling on unimpaired flows for the lower San Joaquin, asking about potential impacts on programs like the Long-Term Replenishment Program (MID) and the In-Lieu program (OID). Thorburn expressed plans to develop strategic approaches for water stewardship despite potential regulatory changes.
- Henderson raised the question of what actions would be taken if the projects outlined in the GSP fail to yield adequate results. She asked if MID planned to encourage participation in programs from Non-District East, or if consequences such as demand management or fallowing would be enforced.
- Brichetto expressed his concern in the LT-GRP is the cost of delivery.



**Stanislaus & Tuolumne Rivers Groundwater Basin Association**  
**Groundwater Sustainability Agency**  
1231 11<sup>th</sup> Street | Modesto, CA 95354  
Email: [strgba@mid.org](mailto:strgba@mid.org)

**7. Next Meeting**

May 8, 2024, at 1:30 p.m. April meeting canceled.

**8. Items too late for the agenda**

Thorburn emphasized the necessity of issuing a 90-day notice to the public preceding any action taken on the GSP amendment.

**MEMORANDUM OF UNDERSTANDING**  
**by and between the**  
**STANISLAUS AND TUOLUMNE RIVERS GROUNDWATER BASIN ASSOCIATION**  
**GROUNDWATER SUSTAINABILITY AGENCY MEMBER AGENCIES**  
**for**  
**UNDERTAKING GROUNDWATER SUSTAINABILITY PLANNING, REPORTING,**  
**STUDIES, MUTUAL AID, and SUPPORT SERVICES WITHIN MODESTO SUB-BASIN**

THIS MEMORANDUM OF UNDERSTANDING (“MOU”), made in the State of California as of the \_\_\_\_ day of \_\_\_\_\_, 2024, is by and between the member agencies of the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA), Groundwater Sustainability Agency (GSA), which includes: the County of Stanislaus, a political subdivision of the State of California; the Oakdale Irrigation District, a California irrigation district; the City of Oakdale, a California public agency; the City of Riverbank, a California public agency; the City of Modesto, a California public agency; the City of Waterford, a California public agency; and the Modesto Irrigation District, a California irrigation district (each referred to individually as a “Member Agency” or collectively as the “Member Agencies”).

**RECITALS**

WHEREAS, groundwater and surface water resources within the Modesto Sub-basin of the San Joaquin Valley Groundwater Basin (DWR Bulletin 118 No. 5-22.02) (“Sub-basin”) are vitally important resources for necessary for maintaining the economic viability, environmental sustainability, and prosperity of the Modesto Sub-basin, and its individual constituents; and

WHEREAS, although each of the Member Agencies overlies, and has rights to extract groundwater from the Sub-basin, each member agency’s individual surface and groundwater rights, historical groundwater production, and groundwater recharge and conveyance activities vary greatly from one another; and

WHEREAS, the Sustainable Groundwater Management Act (“SGMA”) authorizes local agencies to manage groundwater locally, and in a sustainable fashion; and

WHEREAS, SGMA requires groundwater basins designated as either medium or high priority to be managed by one or more Groundwater Sustainability Agencies (“GSA”) by June 30, 2017, and that GSAs adopt a groundwater sustainability plan (“GSP”) by January 31, 2022; and

WHEREAS, pursuant to SGMA, a combination of local agencies may form a GSA through a memorandum of understanding, or other legal agreement; and

WHEREAS, each of the Member Agencies overlies a portion of the Sub-basin, and is a local agency as defined by SGMA; and

WHEREAS, in order to coordinate groundwater management activities and to comply with SGMA, the Member Agencies desire to form a GSA for the portion of the Sub-basin that lies within their collective jurisdictions; and

WHEREAS, the Member Agencies entered into a Memorandum of Understanding in 2016 to form the Stanislaus and Tuolumne Rivers Groundwater Basin Association, Groundwater Sustainability Agency (STRGBA GSA); and

WHEREAS, an agreement is needed to allow current or incoming Member Agencies to reimburse another member agency designated as a budget or consultant contract administrator Member Agency for their equitable share (which is based on the number of participating member

agencies) of activities conducted under auspices of SGMA, and to permit the Member Agencies to pay for services provided by third party consultants, or another Member Agency's employees involving collaborative planning, reporting, monitoring, research, mutual aid, and other activities performed on behalf of the STRGBA GSA.

NOW, THEREFORE, it is mutually understood and agreed as follows:

## **SECTION 1: AUTHORITY OF MEMBER AGENCIES**

- 1.1 Districts are special purpose irrigation districts formed under California Law.
- 1.2 The City of Modesto, City of Oakdale, City of Riverbank, and City of Waterford, are responsible for managing municipal utilities within their respective jurisdictional areas pursuant to their City Charters, Municipal Codes, and applicable California law.
- 1.3 The County of Stanislaus and County of Tuolumne are political subdivisions of the State of California

## **SECTION 2: DEFINITIONS**

- 2.1 "**Consulting Services**" refers to planning, reporting, monitoring and research activities performed by Contractors hired by a Member Agency on behalf of the STRGBA GSA for the management of collective groundwater and surface water resources, that the Member Agencies may agree to jointly fund during the term of this MOU. Consulting Services are described in more detail in Section 3.1.
- 2.2 "**Contractors**" refers to third party professional service consultants hired by a Member Agency to perform any of the Consulting Services described in Section 3.1 using funding provided by the Member Agencies under the terms of this MOU.
- 2.3 "**Direct Services**" means mutual aid and support services, including administrative, project management, or field investigation activities, that are provided by employees of one Member Agency for one or more other Member Agencies using the Task Order process described in Section 3.2.
- 2.4 "**Districts**" means the Modesto and Oakdale Irrigation Districts.
- 2.5 "**Fiscal Year**" refers to the Cities' and/or Counties' fiscal year beginning on July 1 of one calendar year and ending on June 30 of the succeeding calendar year.
- 2.6 "**GSA**" means Groundwater Sustainability Agency
- 2.7 "**MID**" refers to the Modesto Irrigation District.
- 2.8 "**OID**" refers to the Oakdale Irrigation District.
- 2.9 "**Member agencies**" means MID, OID, County of Stanislaus, City of Modesto, City of Riverbank, City of Waterford, and the City of Oakdale.
- 2.10 "**Stanislaus County**" refers to the County of Stanislaus
- 2.11 "**STRGBA GSA**" means Stanislaus and Tuolumne Rivers Groundwater Basin Association, Groundwater Sustainability Agency



**2.12 “Sub-Basin”** means the Modesto Sub-basin of the San Joaquin Valley Groundwater Basin (DWR Bulletin 118 No. 5-22.02)/

**2.13 “Task Order”** refers to the form exchanged by the Member Agencies for the performance of Direct Services .

**2.14 “Tuolumne County”** refers to the County of Tuolumne. Tuolumne County is an independent GSA in the Modesto Sub-basin. Tuolumne County has established a separate agreement with Stanislaus County for participation in the STRGBA GSA.

### **SECTION 3: PLANNING, REPORTING, MONITORING, RESEARCH, STUDIES, AND SUPPORTING ACTIVITIES**

**3.1 Consulting Services:** Any Member Agency may propose hiring Contractors to perform Consulting Services that benefit the Sub-Basin’s collective groundwater and surface water resources. Consulting Services may consist of planning, reporting, monitoring, research, studies, and supporting services that promote the coordination of groundwater management planning activities within the Sub-basin, such as groundwater monitoring and project development and implementation. Consulting Services may consist of research activities concerning subjects such as groundwater pumping and usage, evaluation of the Sub-basin's need for additional or improved water extraction, storage, delivery, conservation, and recharge facilities, groundwater recharge, hydrology, climatology, land usage, and landscape processes. All Member Agencies may agree to participate in the proposed Consulting Services, or only certain Member Agencies may agree to participate in the proposed Consulting Services, depending on the nature of the proposed Consulting Services and available funding. The implementation and funding of Consulting Services shall be subject to the following requirements:

**3.1.1 Scope of Work and Budget:** The Member Agencies participating in the Consulting Services shall jointly agree in writing on the scope of work and budget for each proposed planning, monitoring, and research activity to be performed by Contractors, and on any amendments to work scopes or budgets for Consulting Services using Contractors that were previously approved by the Member Agencies.

**3.1.2 Funding:** The Member Agencies participating in the Consulting Services shall share the costs of any agreed upon Consulting Services equally, or in such other proportion as those Member Agencies may agree in writing. Stanislaus County agrees and promises that, for all cost-share obligations under this Agreement, including cost-share for Base Fee and Contingency Services, it shall also be responsible for all cost-share amounts allocable to Tuolumne County.

**3.1.3 Execution and Administration of Contracts with Contractors:** Any Member Agency that proposes to hire one or more Contractors to perform Consulting Services must obtain the other participating Member Agency, or Member Agencies’ written approval of the proposed contract, scope of work, and budget before hiring the Contractors. The hiring Member Agency will execute the contract(s) for Consulting Services and administer and serve as the project manager of the contract(s). The hiring Member Agency shall obtain the other participating Member Agency or Member Agencies’ advance written approval for any amendment(s), changes in scope, or compensation paid to Contractors under previously approved contracts for Consulting Services. All contract(s) for Consulting Services shall contain language that deems the Contractor(s) to be an

independent contractor of the hiring Member Agency, and not an agent or employee of any other Member Agency to this MOU. Each Member Agency participating in Consulting Services under this MOU shall have the right to review and comment on draft versions of all reports submitted as deliverables by Contractor(s) that were prepared using funding provided in whole or part by that Member Agency. The hiring Member agency shall transmit the draft deliverables or direct the Contractor(s) to transmit the draft deliverables, to the other participating Member Agency or Member Agencies for review and comment. If a reviewing Member Agency does not provide comments on draft deliverables within thirty (30) calendar days from the date of receipt, that Member Agency will be deemed to have approved the content of the draft deliverables. The hiring Member Agency shall transmit final versions of all deliverables to the other Member Agencies providing funding for the Consulting Services.

- 3.2 Direct Services:** Any Member Agency to this MOU may (a) request that another Member Agency provide it with Direct Services, or (b) offer to provide Direct Services to another Member Agency. The Member Agency providing the Direct Services shall prepare, and the Member Agency or Member Agencies receiving the Direct Services shall approve, a Task Order that describes the scope of work, schedule for completion, names and hourly rates of personnel involved, and total estimated budget for the Direct Services to be performed. The Member Agency providing the Direct Services and the Member Agency or Member Agencies receiving the Direct Services will agree in writing on the allocation of costs among the Member Agencies for the Direct Services before the Direct Services are provided.

#### **SECTION 4: GENERAL PROVISIONS**

- 4.1 Fiscal Limitations:** This MOU is subject to the budget and fiscal provisions of the Member Agencies' respective Charters, Financial Policies, and the budget decisions of its Board of Directors, Board of Supervisors, or Council. No funds will be available hereunder until prior written authorization is approved by the respective Member Agencies' authorized designee(s).
- 4.2 Guaranteed Maximum Costs.** The Member Agencies' payment obligation to Member Agencies or Contractors cannot at any time exceed the amount approved for the purpose and period stated in such written approval. No Member Agencies are required to honor, any offered or promised payments to other Member Agencies or Contractors under this Agreement in excess of the approved maximum amount without the Member Agencies having first approved the additional promised amount, and the Member Agencies having modified the contractual agreement.
- 4.3 Invoices:** Any Member Agency that has hired Contractor(s) for Consulting Services, and/or is providing Direct Services under Section 4 of this MOU shall invoice the other Member Agencies benefiting from such services for their agreed upon shares of the costs on a monthly basis, unless another arrangement has been agreed upon in writing. Such invoices shall be paid within thirty (30) calendar days of receipt by the Member Agency being charged for such services. All invoices shall set forth in detail the Direct or Consulting Services provided, and the expenses incurred, and shall identify which Member Agency and/or Contractor(s) provided such services.

**4.4 Insurance:** The Member Agencies' contract(s) with Contractor(s) for Consulting Services performed shall require all Contractors to maintain in force during the course of the contract insurance in the following amounts and coverages, with insurers satisfactory to the Member Agencies: (i) Commercial General Liability Insurance with limits not less than \$1,000,000 each occurrence Combined Single Limit for Bodily Injury and Property Damage, including Contractual Liability, Personal Injury, Products and Completed Operations; and (ii) Automobile Liability Insurance with limits not less than \$1,000,000 each occurrence Combined Single Limit for Bodily Injury and Property Damage, including Owned, Non-Owned and Hired auto coverage, as applicable. Each policy shall: (i) name the other Member Agency or Member Agencies funding the Consulting Services, and their officers, officials, employees and agents, as additional insureds; (ii) provide that the insurance is primary to any other insurance available to any additional insured, with respect to any claims arising out of this MOU; (iii) provide that it applies separately to each insured against whom claim is made or suit is brought; and (iv) provide for at least thirty (30) days' advance written notice to the Member Agencies of cancellation or modification.

**4.4.1 Workers Compensation Insurance for Direct Services:** Each Member Agency agrees to maintain in force, during the term of this MOU, Workers' Compensation insurance, in statutory amounts, with Employers' Liability Limits of not less than \$1,000,000 each accident. Each Member Agency will provide the other Member Agencies evidence of Workers' Compensation insurance prior to entering into this MOU. With respect to employees of a particular Member Agency who are performing Direct Services for another Member Agency, the Member agency that is the recipient of the Direct Services shall not be considered a joint employer of any such employees, who shall be solely managed and controlled by the Member Agency providing the Direct Services.

**4.5 Indemnification:** Member Agencies shall indemnify and hold each respective Member Agency, its officers, employees and agents, harmless from and against any and all liability, loss, expense, attorneys' fees, or claims for injury or damages (collectively, "Claims") arising out of the performance of this MOU, but only in proportion to, and to the extent such Claims are caused by or result from the negligent or intentional acts or omissions of Member Agencies, their officers, agents or employees. In the event of concurrent negligence of a Member Agency, its officers, employees and agents, the liability for any and all Claims shall be apportioned under the California theory of comparative negligence as presently established or as may hereafter be modified.

**4.6 Third Party Beneficiary Status and Indemnity:** All contracts with Contractors for Consulting Services shall (1) contain language granting third party beneficiary status to any Member Agency contributing funds towards the performance of the Consulting Services; and (2) name all Member Agencies funding the Consulting Services as additional indemnitees in any indemnity clause customarily used by the contracting Member Agency in relation to any and all claims for bodily injury or property damage arising out of the negligence or willful misconduct of the Contractor.

**4.7 Audit and Inspection of Records:** Each Member Agency agrees to maintain and make available to the other Member Agencies, during regular business hours, accurate books and accounting records relating to their activities under this MOU. Each Member Agency will permit any other Member Agency to audit, examine and make excerpts and transcripts from such books and records, and to make audits of all invoices, materials, payrolls, records or personnel and other data related to all other matters covered by this MOU, whether funded in whole or in part under this MOU. Each Member Agency shall maintain such data and records in an accessible location and condition for a period of not fewer than five years after final payment under this MOU or until after final audit has been resolved, whichever is later.

The State of California or any Federal agency having provided grant funds for any work under this MOU shall have the audit and inspection rights as conferred by the grant funding. Each hiring Member Agency under Section 3.1.3 shall include the same audit and inspection rights and record retention requirements in all Consulting Services contracts.

- 4.8 Ownership of Results:** The Member Agencies shall have joint ownership of the deliverables that are produced under this MOU, including any drawings, plans, specifications, blueprints, studies, reports, memoranda, computation sheets, computer files and media or other documents prepared by the Member Agencies or their Contractors for the purposes of this MOU. To the extent that deliverables are produced under this MOU through Consulting Services that are funded by only two Member agencies, rather than all Member Agencies, the two Member Agencies that have funded those Consulting Services shall have joint ownership of those deliverables.
- 4.9 Payment of Prevailing Wages:** Member Agencies agree to comply with all applicable local, state and federal laws respecting the payment of prevailing wages for Direct Services provided under this MOU and ensure that all contracts for Consulting Services include a requirement for the Contractor to comply with applicable laws regarding the payment of prevailing wages.
- 4.10 Term:** The term of this MOU shall commence once all named Member Agencies have executed this MOU and shall remain in effect unless terminated by the mutual written consent of all Member Agencies.
- 4.11 Invalidity of Any Term Not to Invalidate Entire Memorandum:** In the event that any of the terms, covenants, or conditions of this MOU or the application of any such term, covenant, or condition shall be held invalid as to any Member Agency by any court of competent jurisdiction, all other terms, covenants, or conditions of this MOU and their application shall not be affected thereby, but shall remain in full force and effect unless any such court holds that those provisions are not separable from all other provisions of this MOU.
- 4.12 Construction of Terms:** This MOU is for the sole benefit of the Member Agencies comprising the STRGBA GSA, and shall not be construed as granting rights to, or imposing any obligations on any person or entity other than the Member Agencies.
- 4.13 Limitation of Liability:** The Member Agencies' obligations under this agreement shall be limited to the payment of the compensation provided for in Section 3.3 of this MOU. Notwithstanding any other provision of this MOU, in no event shall any Member Agency be liable, regardless of whether any claim is based on contract or tort, for any special, consequential, indirect or incidental damages, including, but not limited to, lost profits, arising out of or in connection with this agreement or the services performed in connection with this agreement.
- 4.14 Termination for Convenience:** The Member Agencies may each terminate this MOU for convenience and without cause at any time by giving the other Member Agencies at least thirty (30) days prior written notice of such termination. The terminating Member Agency's written notice shall specify the date on which the termination shall become effective. In the event of termination, each Member Agency shall not be obligated to perform any further activities described in this MOU except as specified in this Section 4.14. In the event of termination, each Member Agency remains obligated to pay for its share of any Consulting or Direct Services performed by Contractors or employees of a Member Agency for which the terminating Member Agency has previously agreed in writing to share costs pursuant to this MOU up to the effective termination date; and all Contractors and the Member

Agencies shall be required to complete any Consulting or Direct Services previously funded by the Member Agencies to their satisfaction. In no event will any Member Agency be liable for Consulting Services costs incurred by Contractors or Direct Services costs incurred by a Member Agency under this MOU after the effective termination date.

**4.15 Amendment:** The Member Agencies may agree to modify the terms of this MOU by written agreement authorized by the governing boards of the Member Agencies.

**4.16 Dispute Resolution:** The Member Agencies shall make good faith efforts to resolve disputes or disagreements arising from this MOU. If a dispute or disagreement arises, the Member Agencies shall meet and confer within ten (10) calendar days of receiving written notification from a Member Agency describing the dispute and shall thereafter schedule and participate in further meetings, if appropriate, in an effort to resolve the dispute or disagreement.

**4.17 Governing Law:** This MOU is made under and shall be governed by the laws of the State of California.

**4.18 Counterparts:** This MOU may be executed in one or more counterparts, each of which shall be deemed to be an original, and all of which together shall constitute one and the same agreement.

In WITNESS WHEREOF, the Member Agencies have executed this Memorandum of Understanding by their duly authorized representatives as of the day and year indicated on the first page of this MOU.

*[Signatures on Following Page]*

**MODESTO IRRIGATION DISTRICT**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Jimi Netniss  
General Manager, MID

Authorized by MID Resolution No. \_\_\_\_\_

Approved as to form:

By: \_\_\_\_\_  
General Counsel

DRAFT



# MODESTO SUBBASIN REVISED GSP

STRGBA GSA Meeting  
May 22, 2024



# AGENDA

- Well Impacts Analysis
- Subsidence Analysis
- Interconnected Surface Water Analysis
- Water Quality Analysis
- Well Mitigation Program



# WELL IMPACTS ANALYSIS

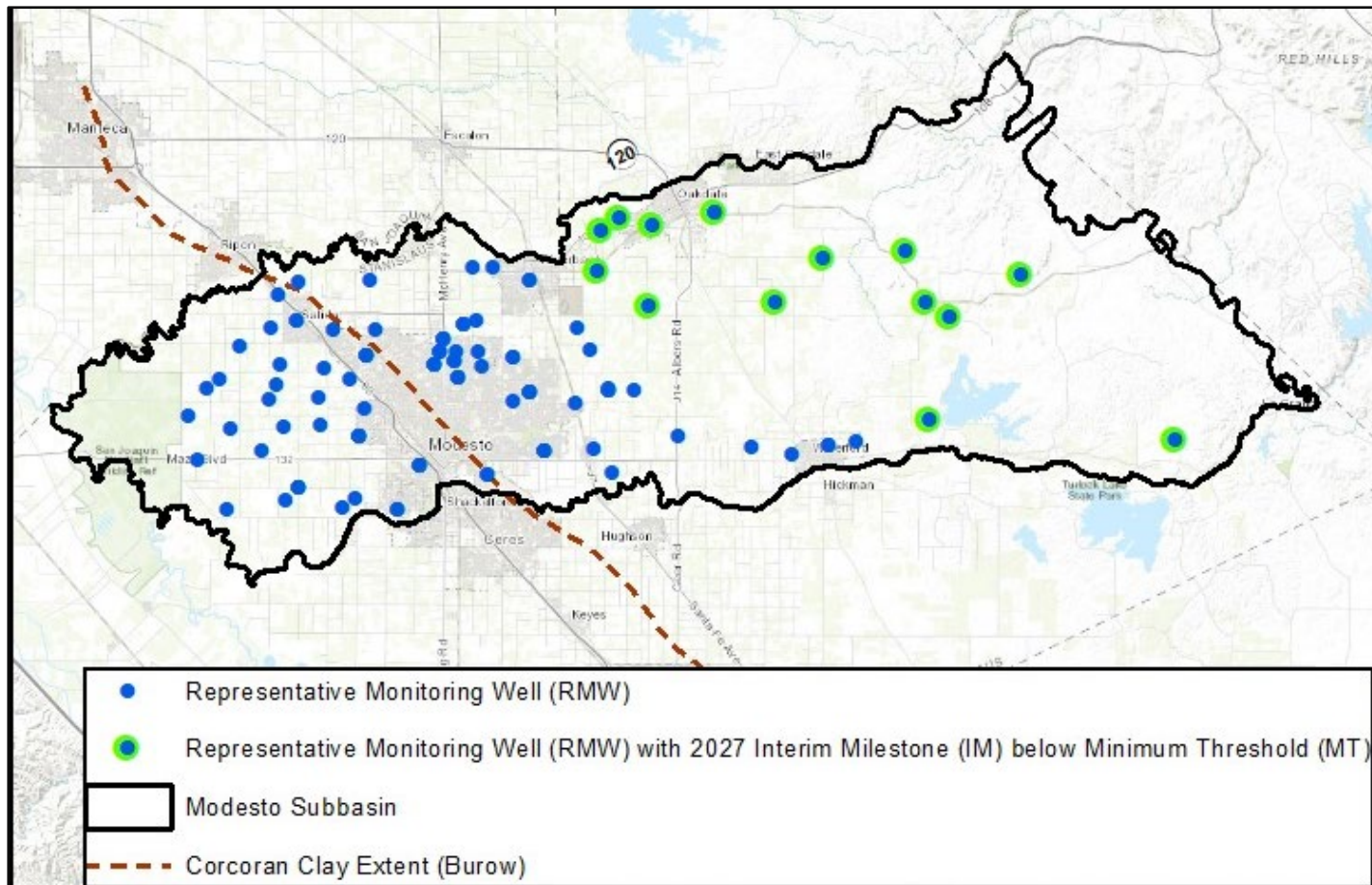
## Goal

How many wells may go dry if groundwater elevations decline below the MT to the 2027 IM, where the 2027 IMs are defined below the MT?

# WELL IMPACTS ANALYSIS APPROACH

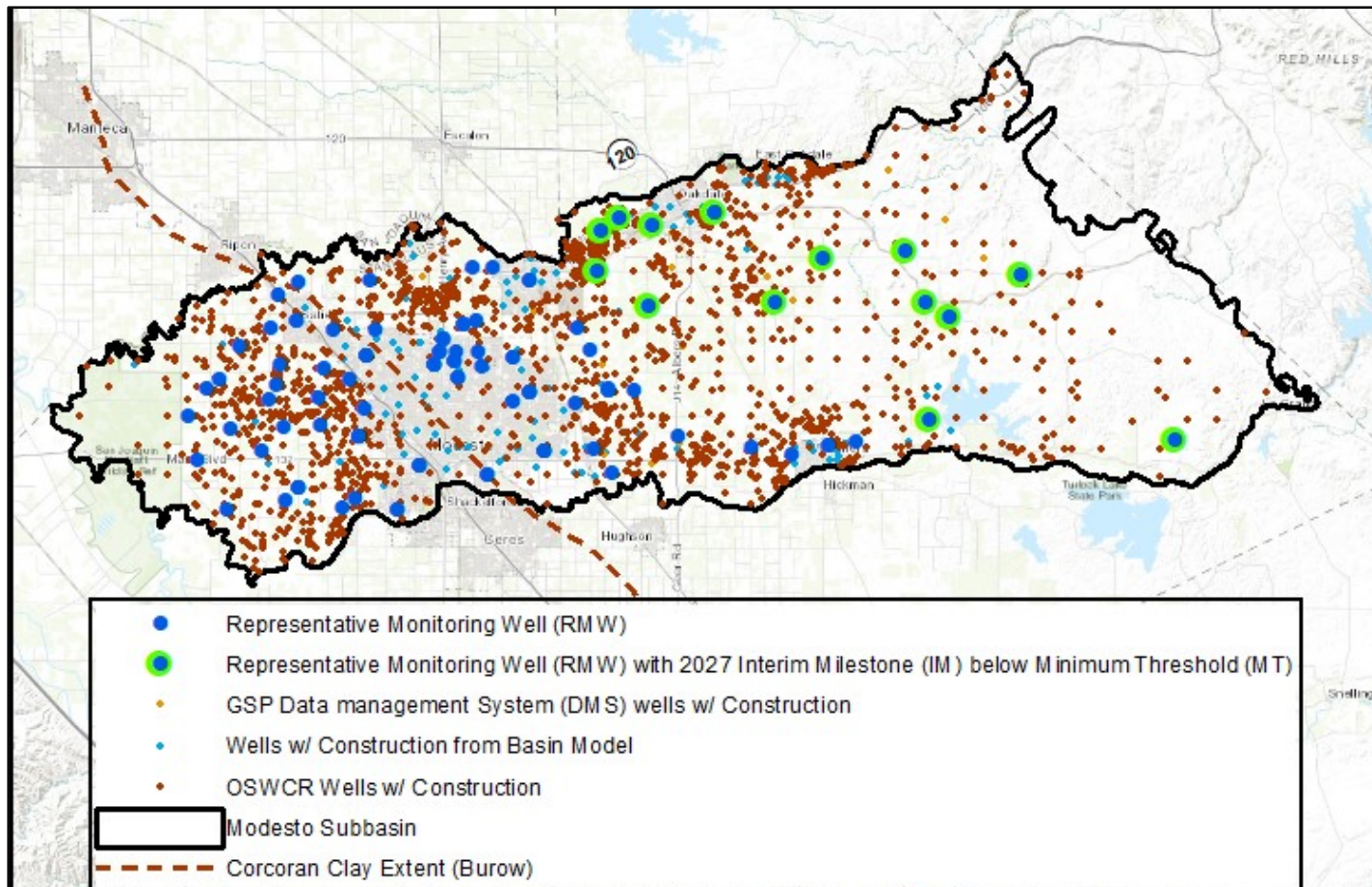
1. Review known well construction, specifically:
  - Screened intervals
  - Total well depth
2. Relate these well characteristics to thresholds in representative monitoring wells (RMWs)
3. Evaluate effects of GSP minimum threshold and interim milestones on existing wells

# REPRESENTATIVE MONITORING WELL LOCATIONS



Representative monitoring wells with water level minimum threshold (MT), highlighted to show those with 2027 interim milestone (IM) below the MT

# AVAILABLE EXISTING WELL INFORMATION



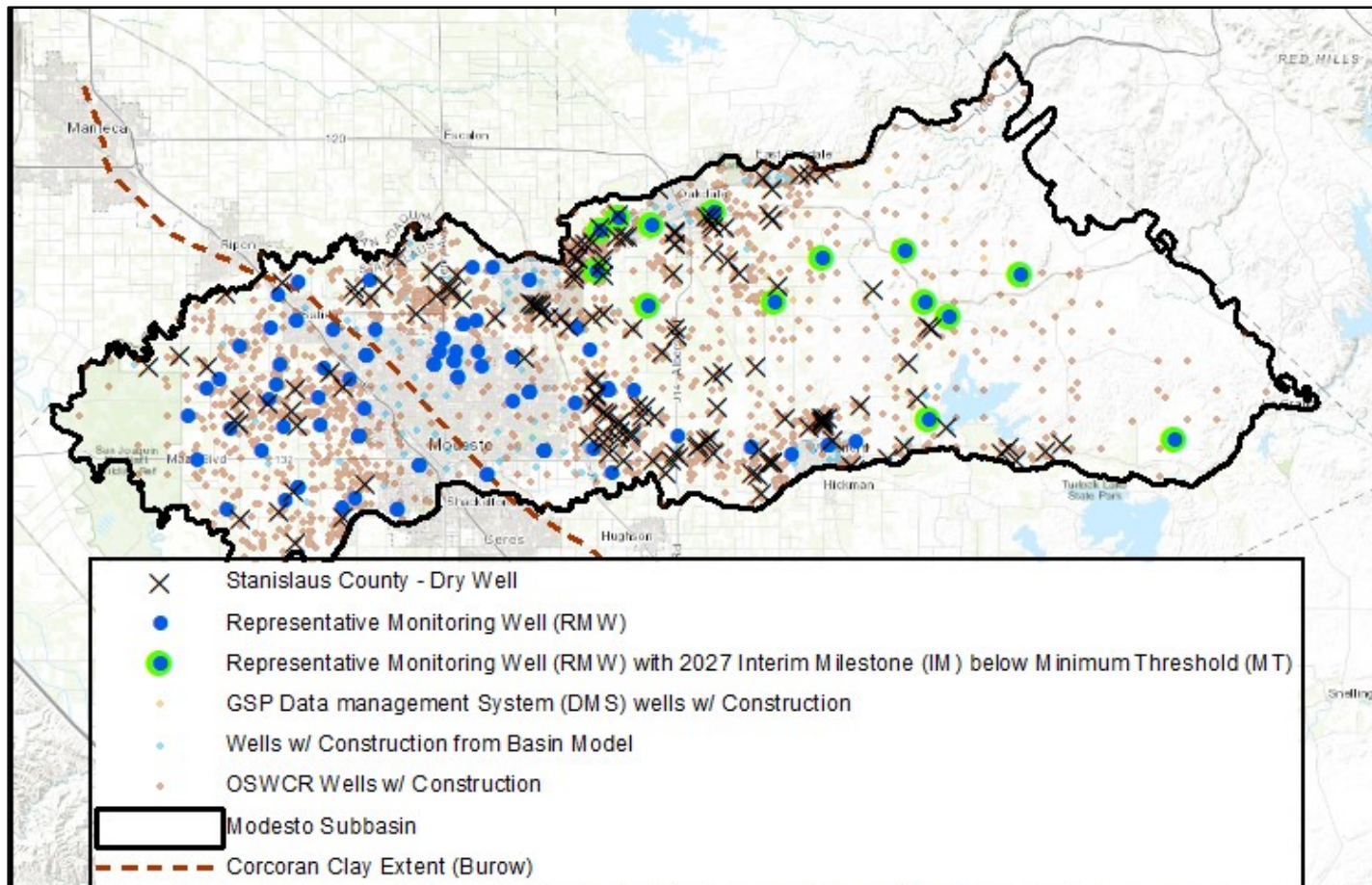
4,563 existing wells with construction included in this analysis.

Well information from:

- GSP data management system (DMS) (82 wells)
- Recent model updates (162 wells)
- DWR OSWCR (4,319 wells)



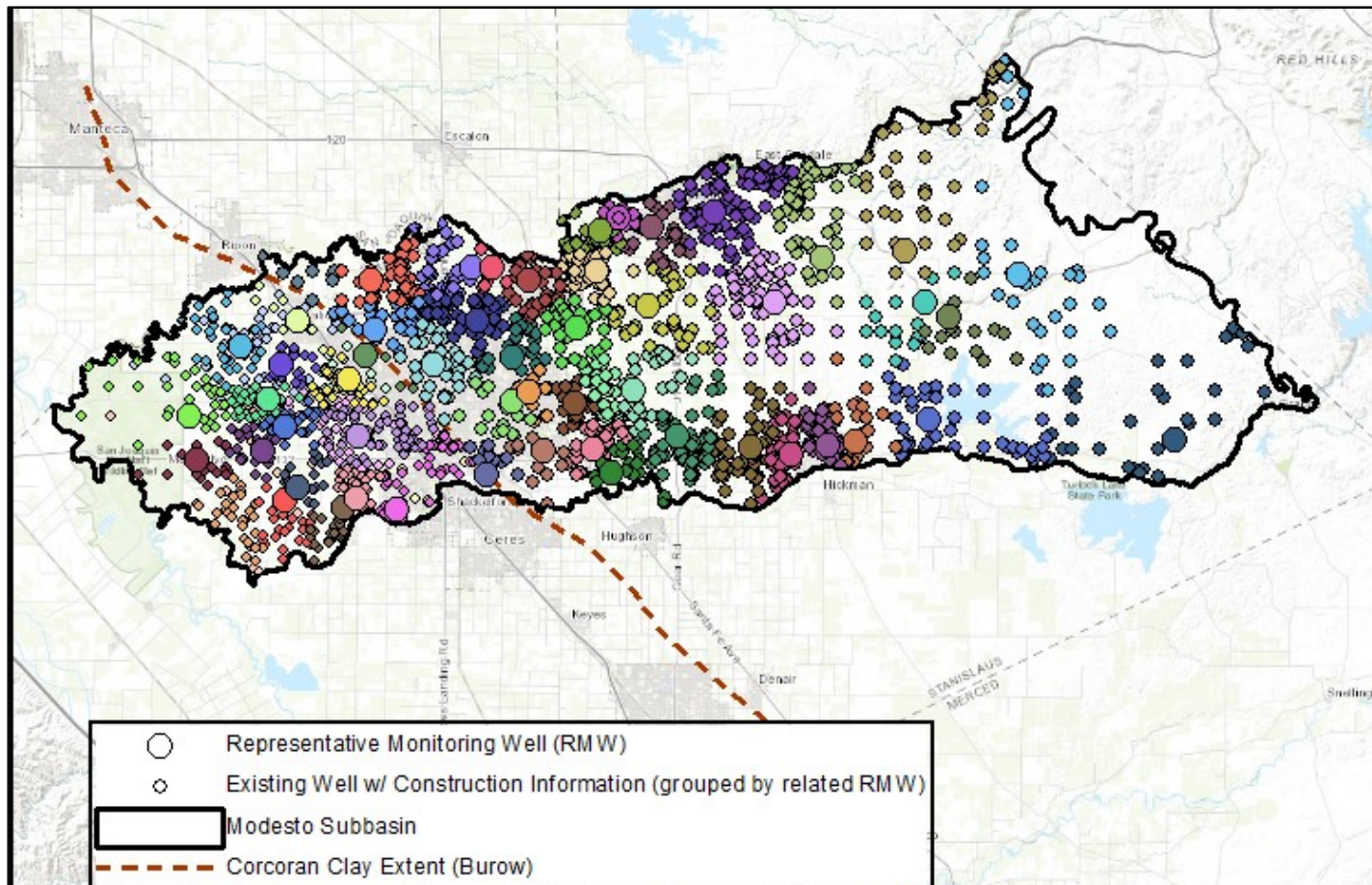
# HOUSEHOLD WATER SUPPLY SHORTAGE REPORTS



These datasets provide coverage of Household Water Supply Shortage Report locations between 2014 and 2017:

- 159 dry wells

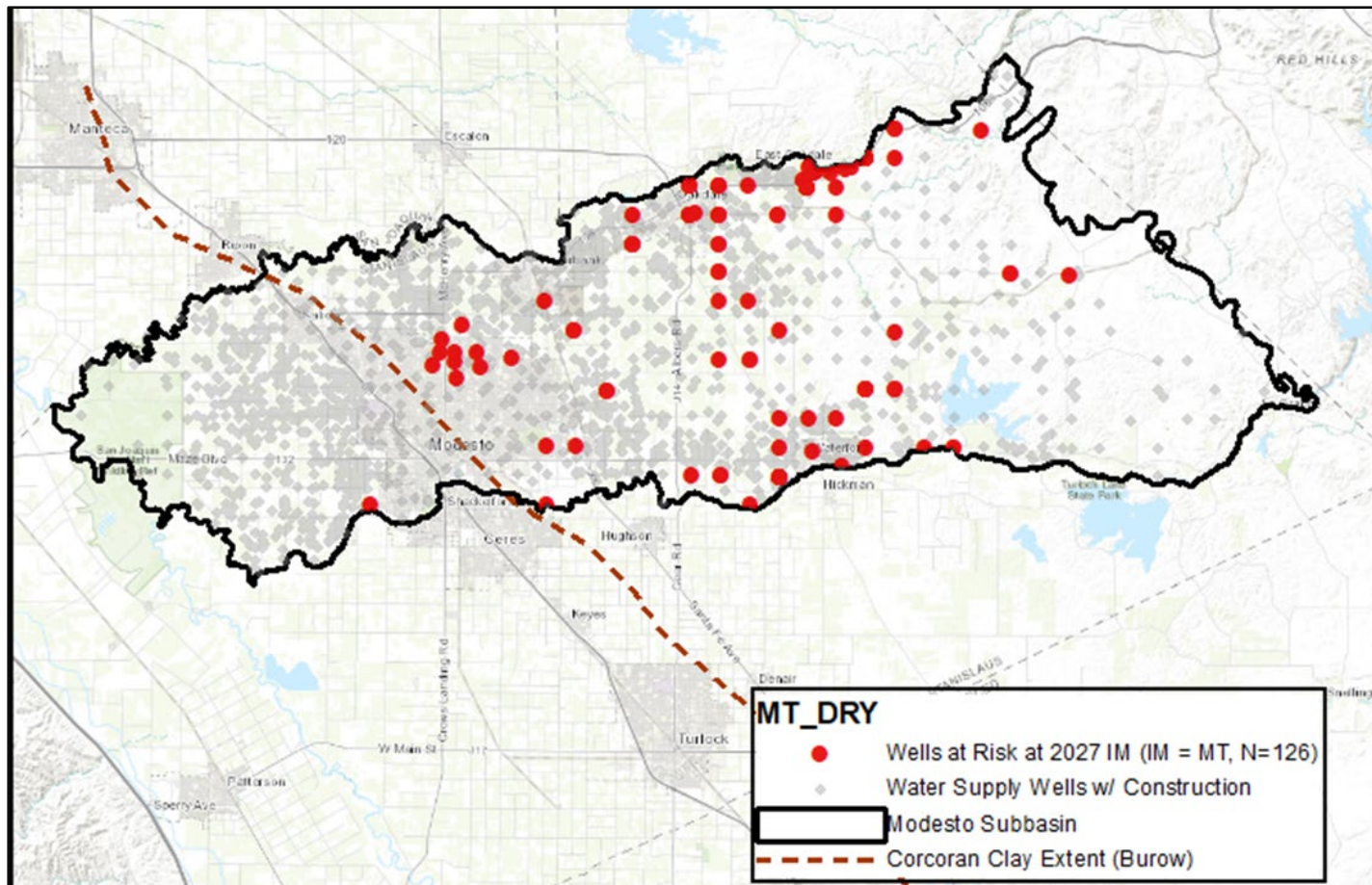
# THIESSEN POLYGON ASSIGNMENTS



Distribution of wells with assignment to nearest RMW (by principal aquifer unit)

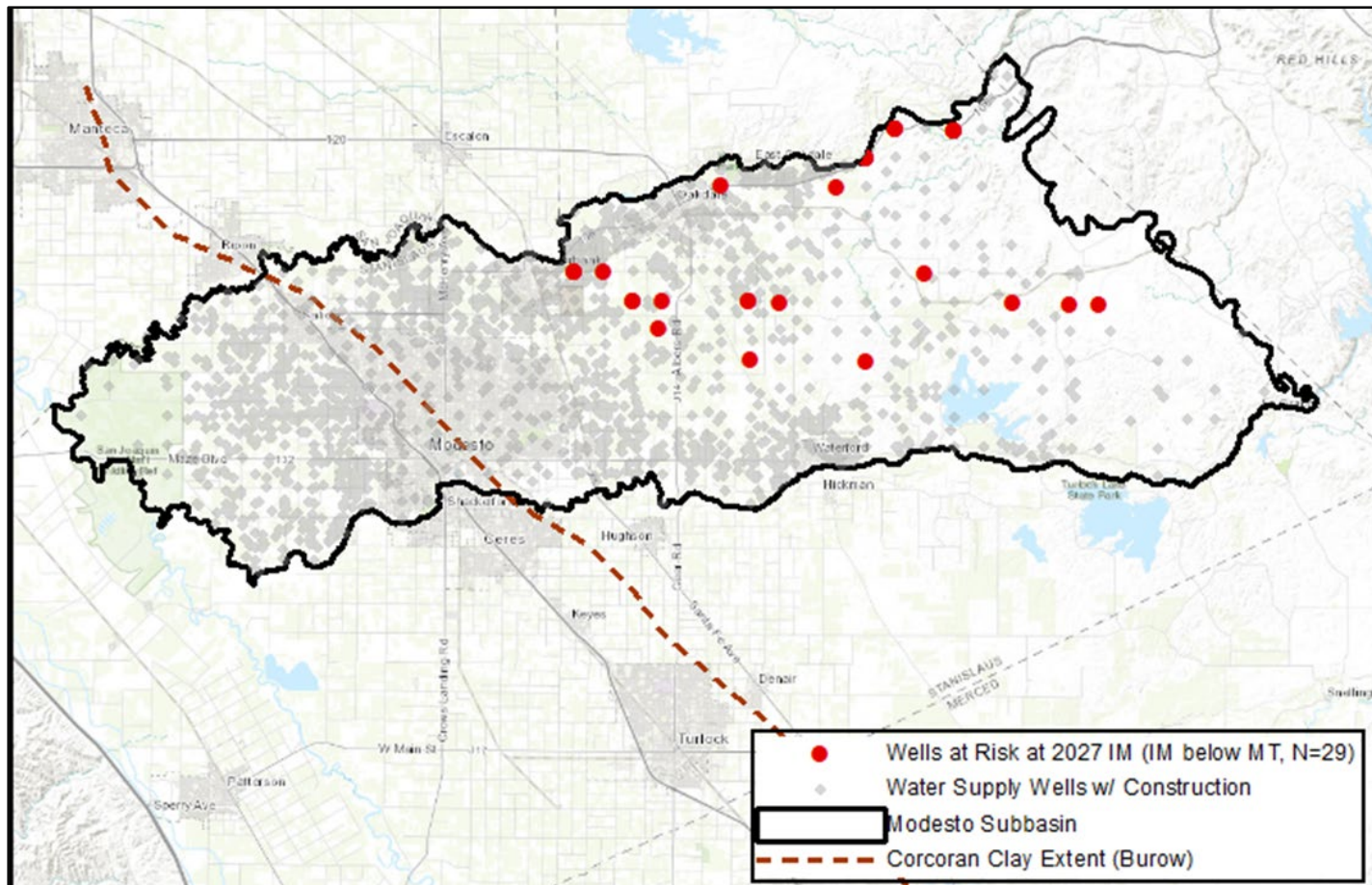


# WELLS PROJECTED DRY AT MINIMUM THRESHOLD



- Well considered dry if depth to MT is below the total depth of the well
- 126 wells with construction likely went dry at the MT
- 126 of 4,563 wells = 2.8%

# WELLS PROJECTED DRY AT INTERIM MILESTONE



- Well considered dry if depth to IM is below the total depth of the well
- If groundwater elevations are lowered from the MT to the IM (where the IM is below the MT):
  - 29 additional wells at risk of going dry
  - 0.6 % of additional existing wells with construction



# WELL IMPACT ANALYSIS RESULTS

Well Type	Statistic	Principal Aquifer Unit			
		Western Upper	Western Lower	Eastern	Basin-Wide
Total	Count of Wells	953	280	3,330	4,563
	N Wells with MT Exceedance	1	0	125	126
	N Wells with IM Exceedance	1	0	154	155
	N Additional Wells with IM Exceedance	0	0	29	29
	% of Wells with MT Exceedance	0.1%	0%	3.8%	2.8%
	% of Wells with IM Exceedance	0.1%	0%	4.6%	3.4%
	% of Additional Wells with IM Exceedance	0.0%	0%	0.9%	0.6%

- Analysis includes 4,563 water supply wells with construction
- 126 wells (2.8%) likely went dry at the MT (2015 water level)
- An additional 29 wells (0.6%) at risk of being dry at the 2027 IM, where the 2027 IM is below the MT
- All of the impacted wells are in the Eastern Principal Aquifer (this is where the 2027 IMs below the MTs are located)

# POTENTIAL IM IMPACTS BY WELL TYPE

Impacted well types:

- Domestic: 27 wells
- Agricultural: 2 wells
- Municipal: 0 wells
- Industrial: 0 wells

Statistic	Production Well Type				
	Domestic	Agricultural	Municipal	Industrial	All
Count of Wells	3,242	978	343	0	4,563
N Wells with MT Exceedance	102	17	7	0	126
N Wells with IM Exceedance	129	19	7	0	155
N Additional Wells with IM Exceedance	27	2	0	0	29
% of Wells with MT Exceedance	3.1%	1.7%	2.0%	0.0%	2.8%
% of Wells with IM Exceedance	4.0%	1.9%	2.0%	0.0%	3.4%
% of Additional Wells with IM Exceedance	0.8%	0.2%	0.0%	0.0%	0.6%

# ATTRIBUTES OF AT-RISK WELLS (2027 IM BELOW MT)

- Well age is known for most of the impacted wells (23 of 29)
- Potentially impacted wells are older and shallower than average:
  - Average age:
    - 32 years for all wells
    - 46 years for impacted wells
  - Average depth:
    - 219 feet for all wells
    - 162 feet for impacted wells

		All Analysis Wells	Additional Wells Dry at IM
Count	Number of Wells	4,563	29
	Number of Wells with Age	3,626	23
Age (years old)	Oldest	76	67
	Mean Age	32	46
	Median Age	34	47
	Youngest	1	10
Depth (ft BGS)	Shallowest Well Depth	20	96
	Mean Depth	219	162
	Median Depth	187	163
	Deepest Well Depth	1512	236

# WELL IMPACTS ANALYSIS LIMITATIONS

- Limited to wells with construction information
- Existing well locations uncertain
- Well status unknown

# SUBSIDENCE ANALYSIS

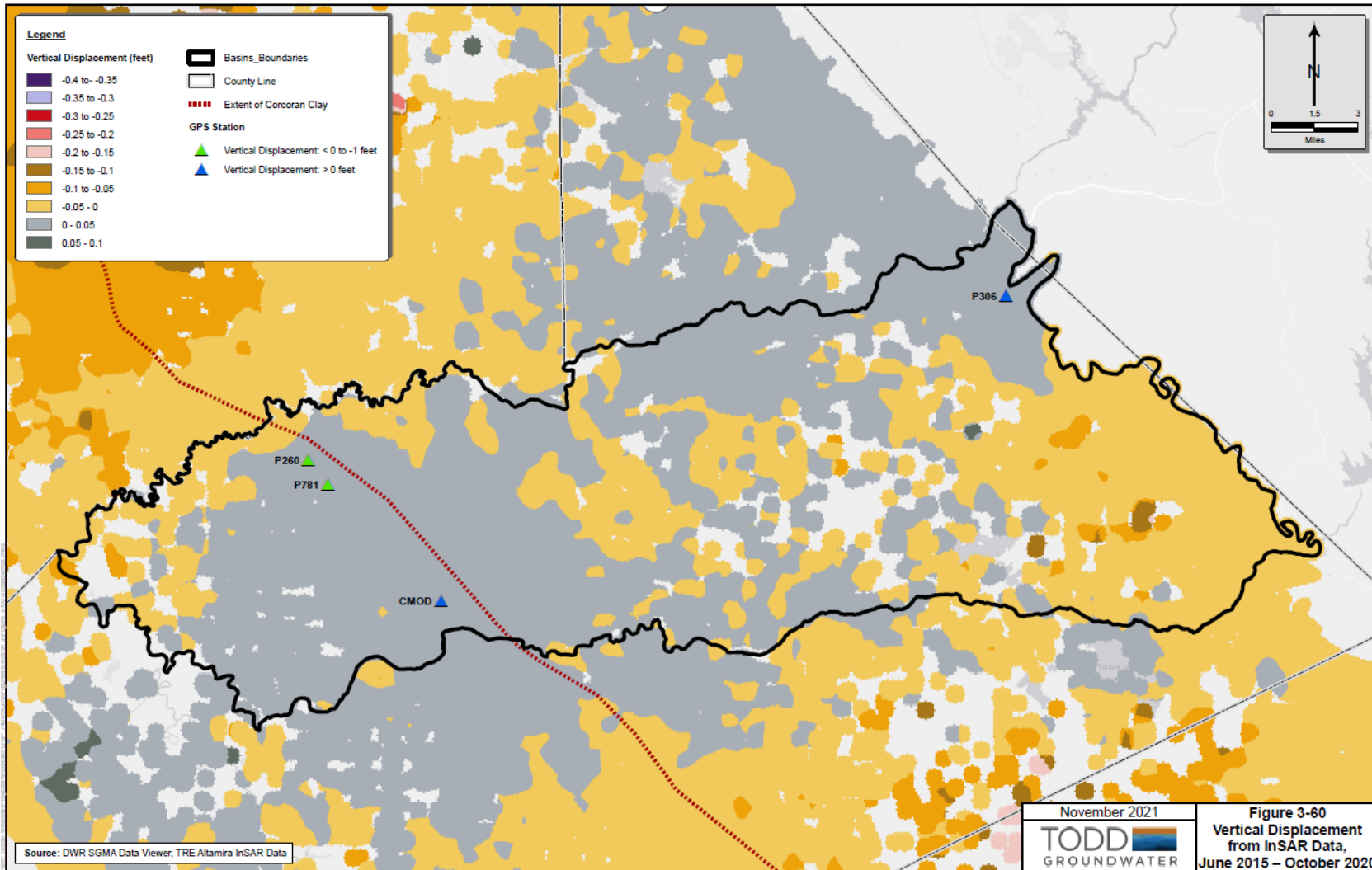
## Goal

Is there a significant land subsidence effect of lowering groundwater levels from the MT to the 2027 IM, where the 2027 IM is below the MT?

# SUBSIDENCE – WHAT DOES THE GSP SAY?

- No known impacts from inelastic land subsidence in Modesto Subbasin.
- Significant rates of land subsidence are not occurring.
- InSAR data from June 2015 to October 2020:
  - No land subsidence over most of the Subbasin
  - One small area of land subsidence indicated within the Corcoran Clay extent in northwest corner of Subbasin (0.24 inches / year)
  - Small amounts of vertical displacement within central and eastern Subbasin (up to 0.36 inches / year)

# SUBSIDENCE – WHAT DOES THE GSP SAY?



*DRAFT*

# SUBSIDENCE – WHAT DOES THE GSP SAY?

- Western Subbasin is considered most susceptible to future land subsidence
  - Western Subbasin is underlain by Corcoran Clay
  - Corcoran Clay is known as key subsidence factor across Central Valley
- Eastern Subbasin is less susceptible to subsidence
  - Eastern Principal Aquifer is more consolidated with no known regional zones like Corcoran Clay
- GSP presents a strategy for minimizing subsidence in western principal aquifers
  - Maintain groundwater levels at or above historical low levels



# SUBSIDENCE ANALYSIS

- RMWs with 2027 IMs below the MTs are located within the Oakdale Irrigation District and Non-District East Management Areas.
- These RMWs are within the Eastern Principal and far from the edge of the Corcoran Clay.
- Lowering groundwater levels from the MT to the IM at these RMWs will not affect water levels at the Corcoran Clay boundary.
- There are no RMWs with 2027 IMs below the MTs within the Corcoran Clay (Western Upper and Western Lower Principal Aquifers).

# CONCLUSION

- Lowering groundwater elevations to the IMs will not result in groundwater elevations declining to below the top of the Corcoran Clay.
- Therefore, it is unlikely that groundwater elevations at the 2027 IMs, where below the MT, will have a significant impact on land subsidence.

# INTERCONNECTED SURFACE WATER ANALYSIS

## Goal

Does lowering groundwater levels from the MT to the 2027 IM, where the 2027 IM is below the MT, have a significant effect on interconnected surface water?

# INTERCONNECTED SURFACE WATER – WHAT DOES THE GSP SAY?

- Tuolumne, Stanislaus and San Joaquin rivers are all interconnected with surface water. Groundwater occurs above the channel bottom (invert) on an average basis, allowing groundwater to interact with surface water.
- Modeling indicates that groundwater and rivers remain connected through the 50-year implementation and planning horizon.
- If depletion increases more than modeling indicates, groundwater could become disconnected.
- Projected increases in streamflow depletion result in a net loss of streamflow. Beneficial uses could be adversely impacted at predicted levels of streamflow depletion even if groundwater and surface water remain connected.
- Projected streamflow depletions are considered undesirable results.

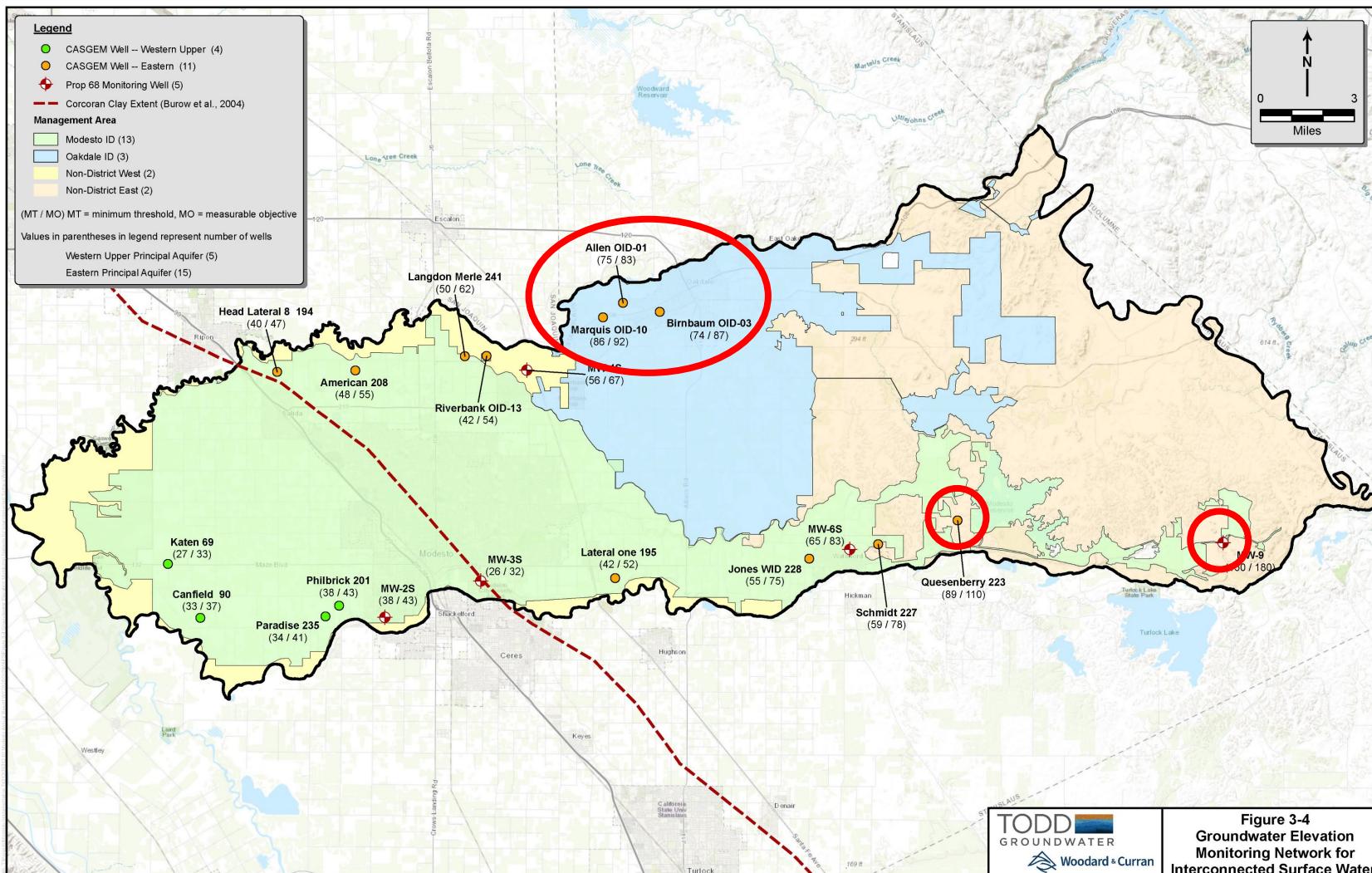
# INTERCONNECTED SURFACE WATER – WHAT DOES THE GSP SAY?

- Data gaps exist for monitoring and management of interconnected surface water along the river boundaries.
- A management action to improve the monitoring network provides for additional shallow monitoring wells to be installed along the rivers over time.

# ISW ANALYSIS METHODOLOGY

1. Focus on RMWs with 2027 IMs below MTs within the Interconnected Surface Water Monitoring Network
  - San Joaquin River: no RMWs
  - Stanislaus River: three RMWs
  - Tuolumne River: two RMWs
2. Compare MT and 2027 IM elevations to nearest stream node invert elevation. (Invert elevation is the elevation of the base of the river, or thalweg.)
3. Evaluate groundwater elevation change from the MT to the 2027 IM
4. Evaluate distance between the RMW and the river

# ISW MONITORING NETWORK RMWs WITH 2027 IMS BELOW THE MTs



## Stanislaus River

- Allen OID-01
- Birnbaum OID-03
- Marquis OID-10

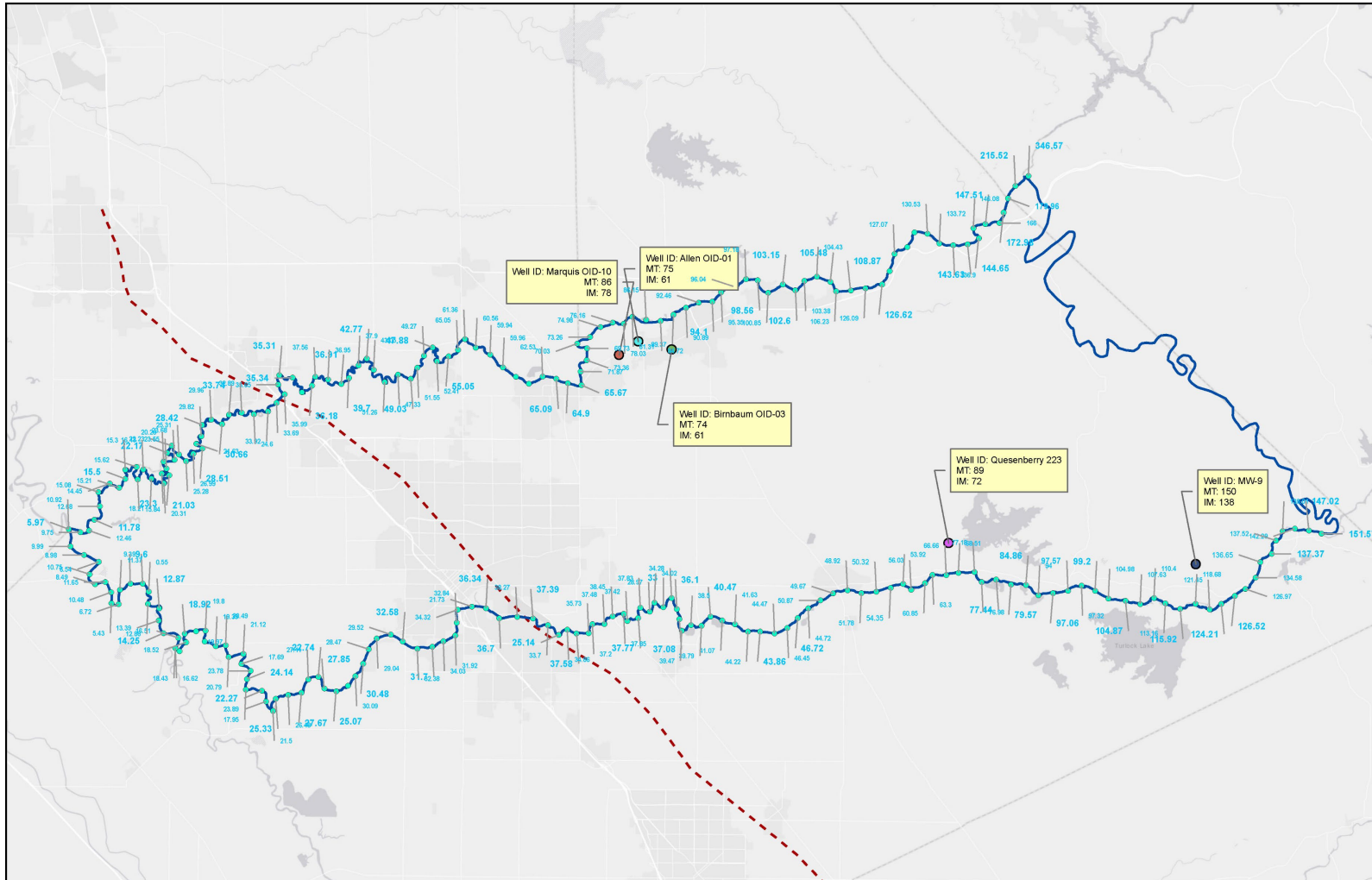
## Tuolumne River

- Quesenberry 223
- MW-9

Figure 3-4  
Groundwater Elevation  
Monitoring Network for  
Interconnected Surface Water



# STREAM NODE INVERT ELEVATIONS



- Stream node invert elevations are from the C2VSim™ model
- Stream nodes spaced approximately 1/2 mile apart along the Tuolumne and Merced rivers



# ISW ANALYSIS

<i>Representative Monitoring Well</i>	<i>Minimum Threshold (MT)</i>	<i>Interim Milestone (IM)</i>	<i>Nearest Stream Node Invert Elevation (feet MSL)</i>	<i>Distance from Well to Nearest Stream Node (feet)</i>	<i>MT Above or Below Nearest Stream Node?</i>	<i>IM Above or Below Nearest Stream Node?</i>
<b>Stanislaus River</b>						
Allen OID-01	75	61	86	7,162	below	below
Birnbaum OID-03	74	61	85	5,728	below	below
Marquis OID-10	86	78	78	5,783	above	above
<b>Tuolumne River</b>						
Quesenberry 223	89	72	67	4,205	above	above
MW-9	150	138	119	5,637	above	above

# RESULTS

- MT and 2027 IM elevations are either both above or both below the nearest stream node invert elevation.
- No RMWs have an MT elevation above the nearest stream node invert elevation and an IM elevation below the nearest stream node invert elevation.
- This is good news.

# RESULTS – STANISLAUS RIVER

- Marquis OID-10: MT and 2027 IM are above the nearest stream node invert elevation
- MT and 2027 IM are below the nearest stream node invert elevation:
  - Allen OID-01
    - 14-foot elevation change from MT to IM
    - approximately 7,200 feet from the Stanislaus River
  - Birnbaum OID-03
    - 13-foot elevation change from MT to IM
    - approximately 5,700 feet from the Tuolumne River

# RESULTS – TUOLUMNE RIVER

- MT and 2027 IM are above the nearest stream node invert elevation at both RMWs

# RESULTS

- There are two RMWs along the Stanislaus River where both the MT and IM elevations are below the nearest stream invert elevation.
- Both RMWs are more than a mile from the Stanislaus River.
- The difference between the MT and the IM elevations in these two RMWs are 13 and 14 feet.

Question: Will lowering groundwater levels 13 or 14 feet more than a mile from the Stanislaus River significantly increase streamflow depletion?

Answer: Uncertain. Depends on river stage and local hydrogeology. A data gap along the rivers will need to be filled to help answer this question.

# CONCLUSION

- Two wells more than a mile from the Stanislaus River have MT and 2027 IM elevations that are below the nearest stream node invert elevation.
- It is uncertain whether lowering groundwater levels 13-14 feet over a mile from the Stanislaus will cause an undesirable results (increased streamflow depletion).
- The GSP recognizes groundwater conditions along the river boundaries as a data gap.

# WATER QUALITY ANALYSIS

## Goal

What are the potential impacts on the degradation of water quality sustainability indicator of lowering groundwater levels from the MTs to the 2027 IMs, where 2027 IMs are below the MTs.



# WATER QUALITY ANALYSIS

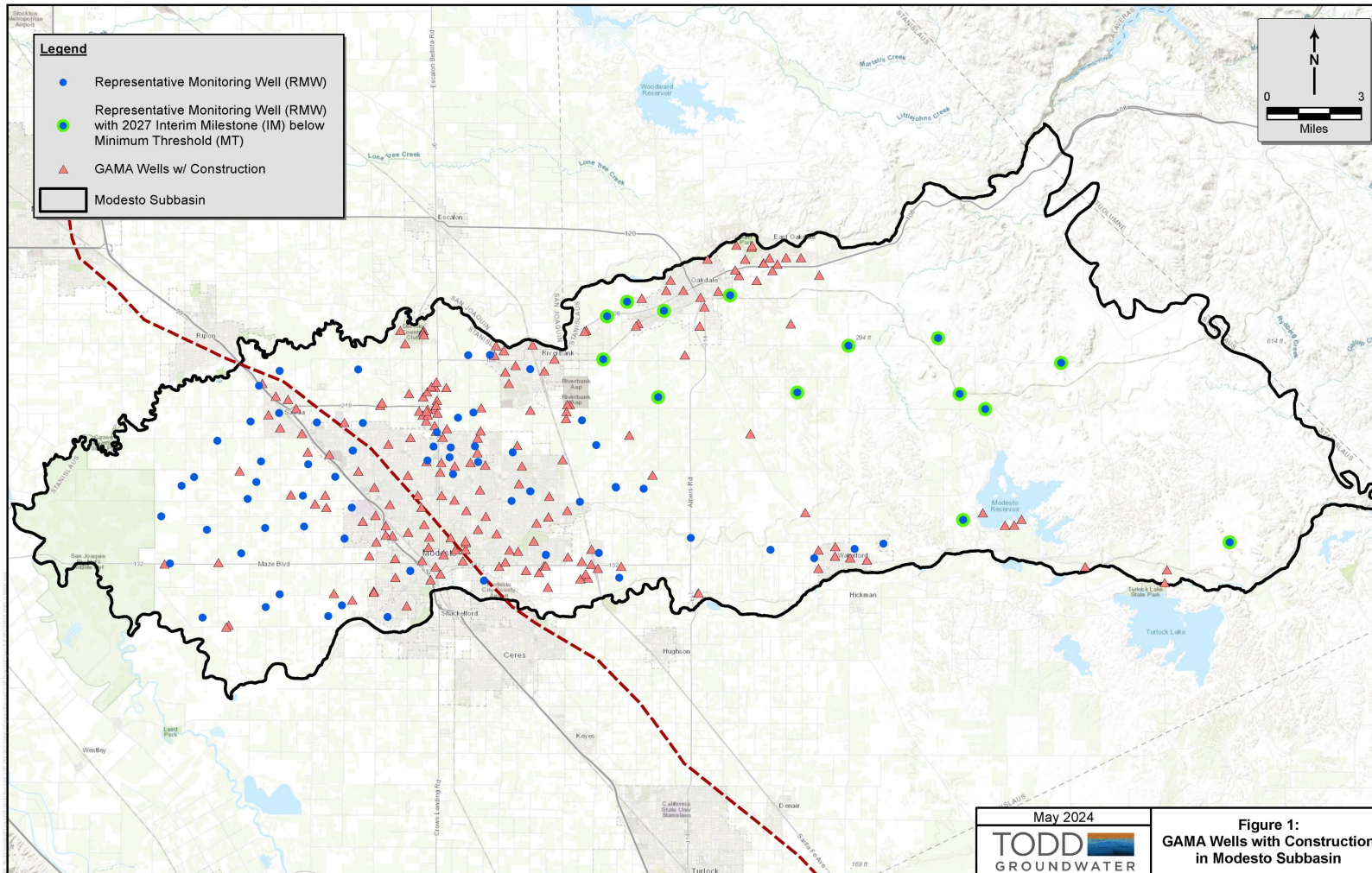
GSP defines seven constituents of concern (COCs) that have the highest potential to cause undesirable results:

- Nitrate
- Tetrachloroethene (PCE)
- 1,2,3-trichloropropane (TCP)
- Arsenic
- Uranium
- Total dissolved solids (TDS)
- Dibromochloropropane (DBCP)

# WATER QUALITY ANALYSIS APPROACH

- Downloaded all available water quality data in the Subbasin for the COCs from the Groundwater Ambient Monitoring and Assessment Program (GAMA) portal website.
- Analysis based on GAMA data at wells with known construction
- Compared water levels at representative monitoring wells to time-concentration plots of COCs at the five closest GAMA wells
- Compared screened interval depths between RMWs and GAMA wells
- Compared trends: water levels in the RMS wells and COC concentrations in the GAMA wells

# WATER QUALITY ANALYSIS APPROACH



- 207 GAMA wells with construction
- GAMA wells concentrated within the municipalities
- Western Principal Aquifers: most in Western Lower Principal Aquifer
- Eastern Principal Aquifer: most in western region and along rivers
- Many of the RMWs with 2027 IMs are not near GAMA wells

*DRAFT*

# RESULTS

- A clear relationship between COC concentrations and groundwater levels at RMWs was not apparent.
- Nitrate:
  - At most GAMA wells, nitrate was the only COC with sufficient data
  - No clear correlation between nitrate concentrations and groundwater levels
- Arsenic: several GAMA wells had arsenic detections, no clear trends
- Several wells in Western Lower Principal Aquifer had increasing uranium, TDS and nitrate trends. But lack of nearby RMWs with water level data made comparison impossible.

# CONCLUSIONS

- The absence of clear relationships between declining groundwater levels and COC concentrations suggests that lowering groundwater levels from the MTs to the 2027 IMs, where the 2027 IMs are below the MTs, should not affect the degradation of water quality sustainability indicator.

# WELL MITIGATION PROGRAM

- A work in progress compiled from multiple existing plans.
- Describes how GSAs can mitigate impacts to water supply wells that failed due to declining groundwater levels caused by overdraft
- Focuses on short-term mitigation program but acknowledges long-term projects, for example:
  - Short-term temporary: bottled water and/or water tanks
  - Replacing / setting pumps deeper; well rehabilitation / replacement
  - Long-term demand management or managed aquifer recharge in priority areas

# WELL MITIGATION PROGRAM

- Assumes a MOU/Resolution for preliminary planning
- Provides for a well mitigation fund for the subbasin
  - With a commitment to initial and long-term funding
- Proposes a Program Development Committee to develop and implement the Program on behalf of the TAC
  - Defines when the Program begins
  - Defines period for eligible mitigation for impacts: after January 31, 2022?  
(GSP adoption date)



# WELL MITIGATION PROGRAM

- Provides public outreach and claims assistance
- Develops a claims process
  - Claims eligible for mitigation
  - Claims application requirements
  - Technical Review Committee
  - Claims administration: review, reporting, recommendations, appeal process
  - Well owner agreements to accompany mitigation
- Framework is being developed now with an implementation schedule to demonstrate commitment to DWR



QUESTIONS?



# MODESTO SUBBASIN REVISED GSP

## PROJECTS AND MANAGEMENT ACTIONS

STRGBA GSA MEETING

MAY 22, 2024



# AGENDA

- Introduction
  - SGMA Regulations
  - Corrective Action #2
- Sustainability Approach
  - Sustainable Yield
  - Anticipated Projects
  - Management Actions
- Discussion

# SGMA REGULATIONS

## PROJECTS AND MANAGEMENT ACTIONS

- **GSP Regulation 354.44 (a):**  
*“Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.”*
- **GSP Regulation 354.44 (b)(1):**  
*“A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent.”*

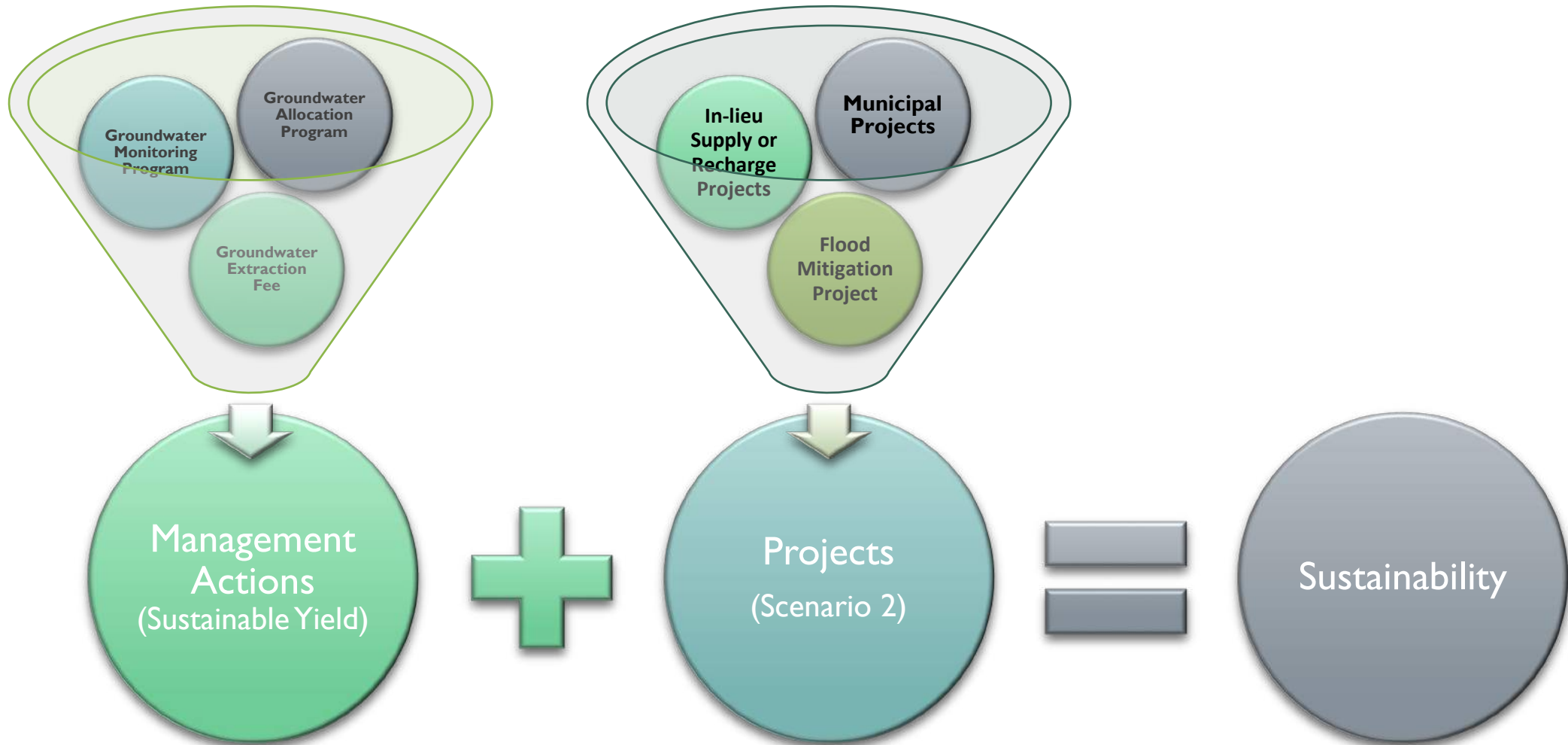
# CORRECTIVE ACTION #2

## KEY TAKEAWAYS FROM DWR DETERMINATION

- The GSA needs the tools to manage if groundwater conditions are unsustainable and/or if projects do not perform as expected
- Paradigm Shift:
  - Management actions as *primary* tool to *guarantee* sustainability.
  - Actions will empower the STRGBA GSA to act effectively and efficiently.
  - Used as a backstop to account for uncertainty (hydrology, implementation, etc).
  - Shall present methods, triggers, impacts, and escalating contingencies.
  - Will be offset with projects, dependent on implementation and effectiveness.

# CORRECTIVE ACTION #2

## SUSTAINABILITY PATH





# CORRECTIVE ACTION #2

## PMA UNCERTAINTY

### Change In Storage

- 2016 (D) 67,000 AF
- 2017 (W) -119,000 AF
- 2018 (BN) 118,000 AF
- 2019 (W) -40,000 AF
- 2020 (D) 113,000 AF
- 2021 (C) 137,000 AF
- 2022 (C) 171,000 AF
- 2023 (W) -78,000 AF

### PMA Uncertainty

- DWR expressed concern that proposed projects would be able to reverse the subbasin's overdraft.
- **Solutions:** Provide additional clarity and detail  
Prioritize demand management  
Show projects achieving sustainability

Water Year Type	Historical Percentage	Historical $\Delta$ Storage
W	33%	86,000
AN	9%	-59,000
BN	9%	-85,000
D	18%	-94,000
C	30%	-142,000
<b>W/AN</b>	<b>42%</b>	<b>55,000</b>
<b>BN/D/C</b>	<b>58%</b>	<b>-118,000</b>
<b>Average</b>		<b>-44,000</b>

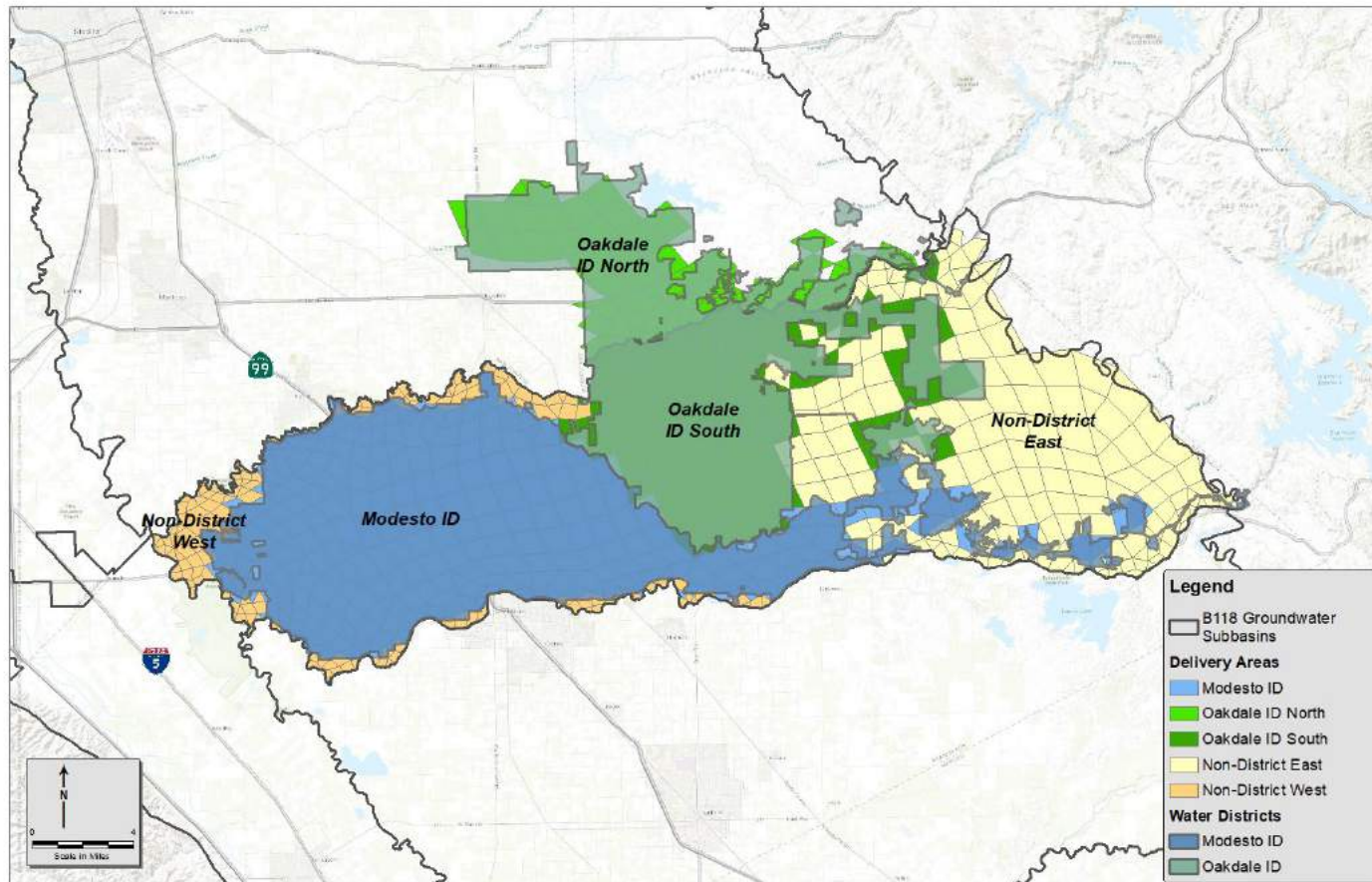


# MODESTO SUBBASIN REVISED GSP

SUSTAINABLE YIELD

# SUSTAINABLE YIELD

## MODESTO SUBBASIN MANAGEMENT AREAS



## Water User Groups

- **Group 1: Net-Contributors**
  - Modesto ID
  - Oakdale ID
  - Non-District West (riparian)
- **Group 2: Net-Extractors**
  - Non-district East
  - Cities of Modesto, Oakdale, Riverbank, & Waterford

# SUSTAINABLE YIELD

## LAND & WATER USE BUDGET

	Historical (WY 1991-2015)	Baseline (50-Yr Avg)	SY Scenario (50-Yr Avg)
Ag. Area	138,000	132,000	122,000
Ag. ETAW	288,000	321,000	292,000
Ag. SW Deliveries	289,000	266,000	266,000
Ag. Private Pumping	223,000	230,000	183,000
Ag. Agency Pumping	26,000	24,000	24,000
Urban Area	31,000	37,000	37,000
Urban Demand	88,000	116,000	116,000
Urban SW Deliveries	26,000	51,000	51,000
Urban Pumping	63,000	60,000	60,000
<b>Total SY Pumping</b>	<b>311,000</b>	<b>314,000</b>	<b>267,000</b>

### ■ Demand Reduction Areas:

- Ag. Consumptive Use
- Urban Demand

### ■ Reduction Factors:

- Group 1 Ag and M&I 0%
- Group 2 M&I 0%
- Group 2 Agricultural 58%

### ■ Water Use Budget

- Total Basin-wide Demand Reduction (Ag & Urban): 7%
- Basin-wide Ag Demand Reduction: 9%
- Total Pumping Reduction: 15%

■ All units are in acre-feet

# SUSTAINABLE YIELD

## GROUNDWATER BUDGET

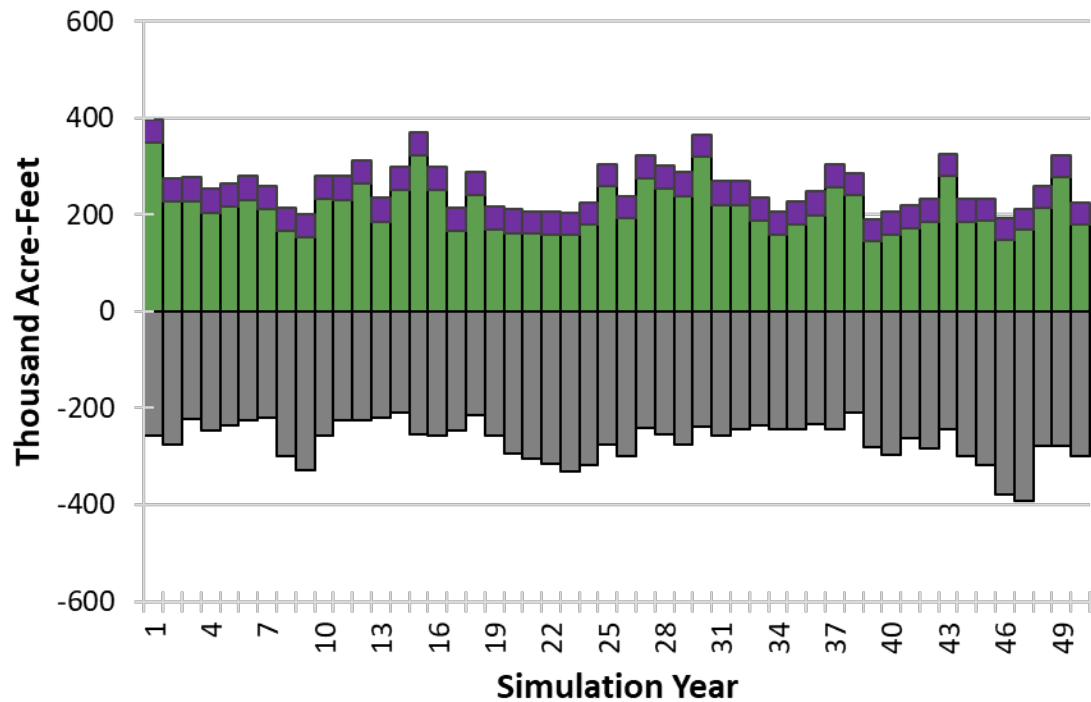
	Historical (WY 1991-2015)	Baseline (50-Yr Avg)	SY Scenario (50-Yr Avg)
GW Storage Depletion	43,000	11,000	0
Total Stream Seepage	-60,000	26,000	-13,000
Tuolumne River Seepage	-30,000	11,000	-11,000
San Joaquin River Seepage	-14,000	-9,000	-12,000
Stanislaus River	-16,000	24,000	9,000
Deep Percolation	272,000	228,000	213,000
Inflow from Foothills	9,000	9,000	9,000
Canal and Reservoir Recharge	49,000	47,000	47,000
Groundwater Pumping	-311,000	-314,000	-267,000
Total Inter-Subbasin Flow	-2,000	-7,000	11,000
Inter-Subbasin Flows from Eastern San Joaquin	-2,000	-7,000	-1,000
Inter-Subbasin Flows from Turlock	-2,000	-1,000	7,000
Inter-Subbasin Flows from Delta-Mendota	2,000	2,000	5,000

### Notes:

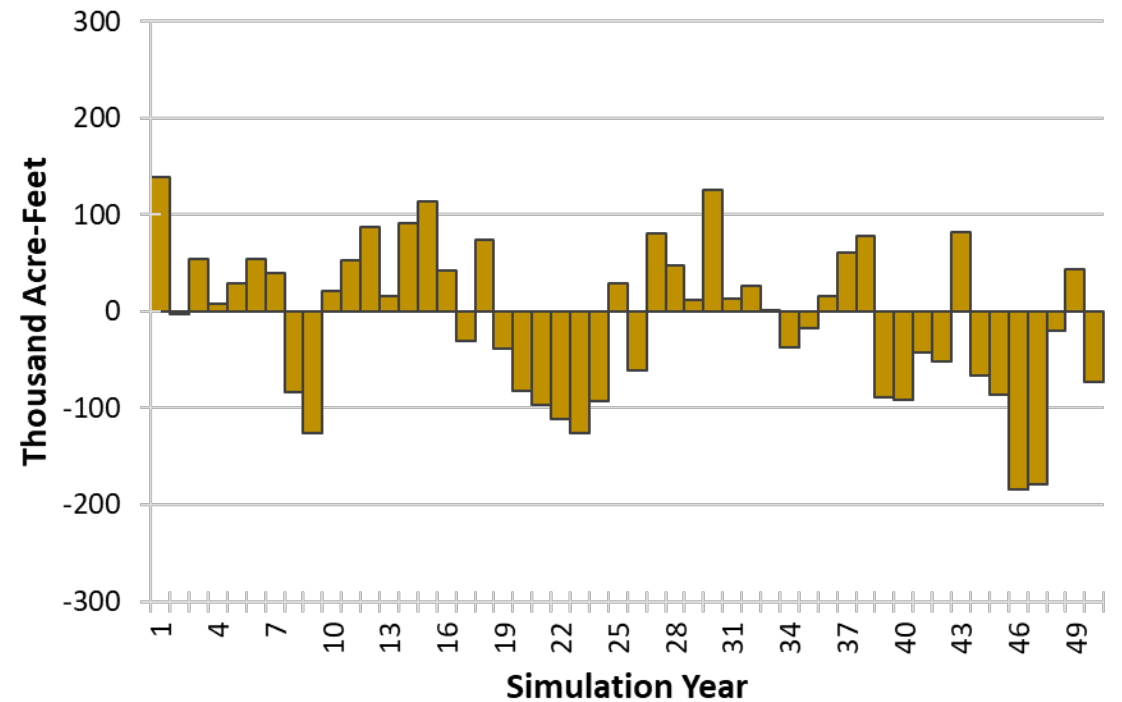
- Scenario targets zero change in **aquifer storage**
- Under sustainable yield, **stream interaction** to the aquifer system is lower than the baseline but thresholds are based on GWL rather than total volumes.
- Total **groundwater production** reduced by 47,000 AFY or 15% compared to the Baseline
- Positive values is water moving into the groundwater system, negative values represent water leaving the aquifer.
- All units are in acre-feet

# SUSTAINABLE YIELD

## OPERATIONAL WATER BUDGET



- Groundwater Pumping
- Deep Percolation
- Canal and Reservoir Recharge

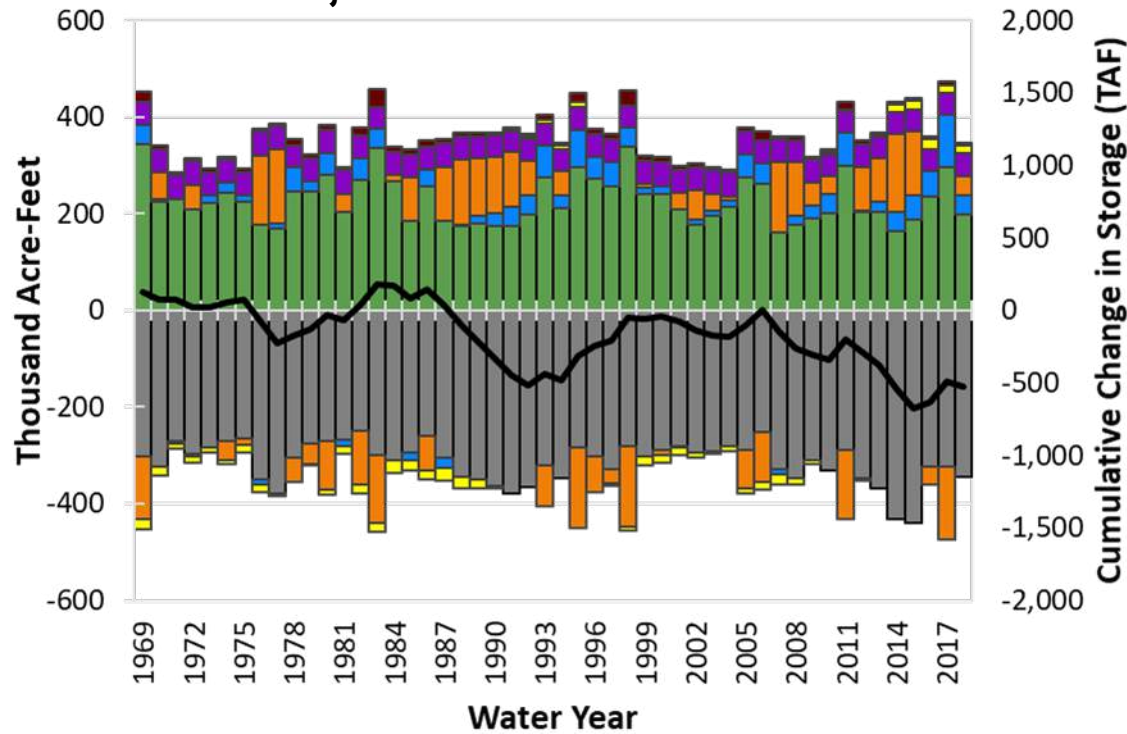


- Net Recharge

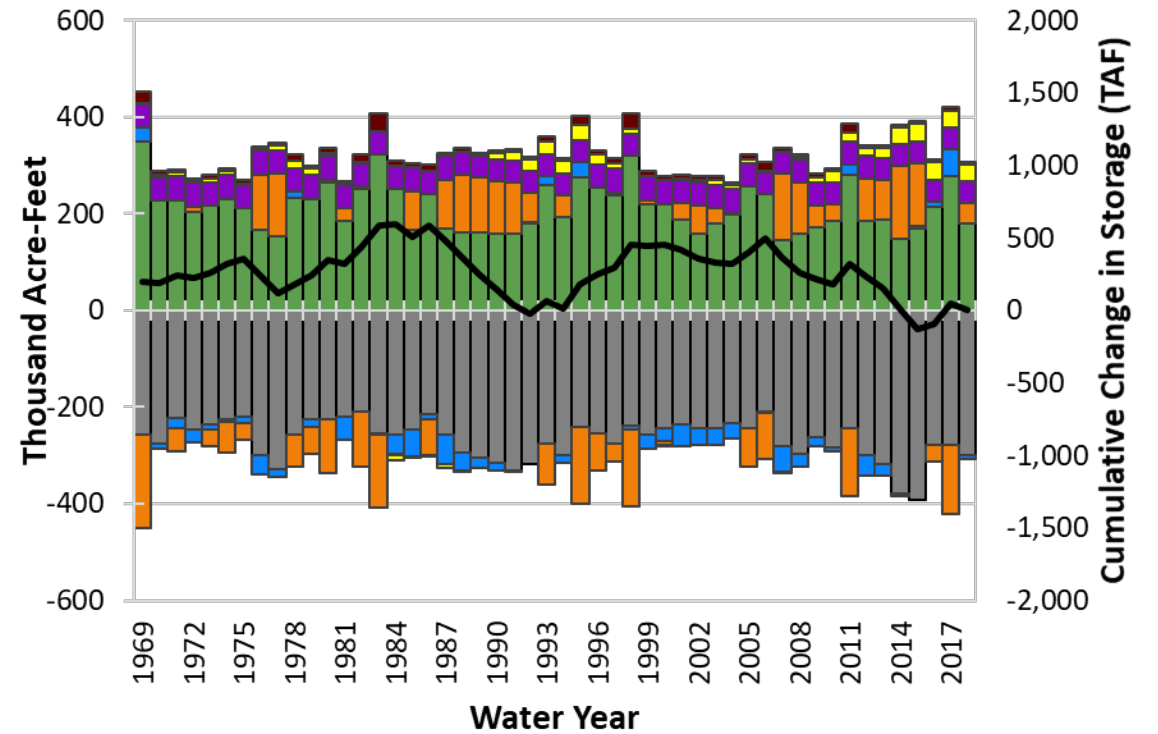
# SUSTAINABLE YIELD

## GROUNDWATER BUDGET

### Projected Conditions Baseline



### Sustainable Yield Scenario



- Inflow from Foothills
- Subsurface Flow from Adjacent Areas
- Canal and Reservoir Recharge
- Change in GW Storage
- Stream/Aquifer Interaction
- Deep Percolation
- Groundwater Pumping
- Cumulative Change in Storage

- Inflow from Foothills
- Subsurface Flow from Adjacent Areas
- Canal and Reservoir Recharge
- Change in GW Storage
- Stream/Aquifer Interaction
- Deep Percolation
- Groundwater Pumping
- Cumulative Change in Storage





# MODESTO SUBBASIN REVISED GSP

## MODESTO SUBBASIN PROJECTS

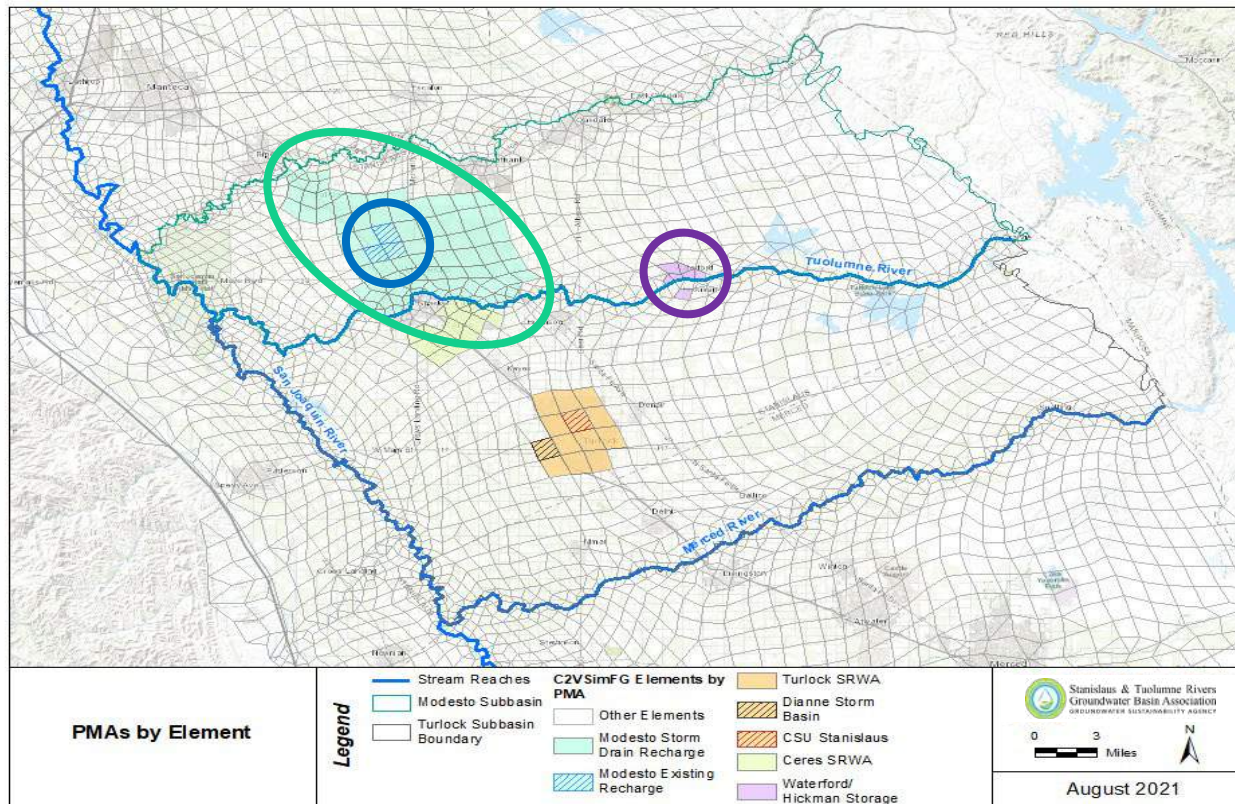
# MODESTO SUBBASIN PROJECTS

## GROUP I & II PROJECTS

#	Urban Projects	Project Proponent	Group	Scenario I	Scenario II	Scenario III
0	Growth Realization of Surface Water Treatment Plant Phase II	City of Modesto	1	X	X	X
1	Municipal Conservation Projects	City of Modesto	1	X	X	X
2	Storm Drain Cross Connection Removal Project	City of Modesto	2	X	X	X
3	Surface Water Supply Project	City of Waterford	2	X	X	X
<b>In-lieu Supply or Recharge Projects</b>						
4	MID to Out-of-District Lands In-lieu and Direct Recharge Project	Non-District East	2		X	X
5	OID to Out-of-District Lands In-lieu and Direct Recharge Project	Non-District East	2		X	X
<b>Flood Mitigation Projects</b>						
6	Tuolumne River Flood Mitigation Direct Recharge Project	Stanislaus County	2		X	X
7	Dry Creek Flood Mitigation Direct Recharge Project	Stanislaus County	2		X	X
<b>Post-PMA Sustainable Yield Analysis</b>						
	Demand Reduction					X

# MODESTO SUBBASIN PROJECTS

## URBAN PROJECTS



### MOD Conservation

- Reduced PCWU in MOD
- Reduction up to ~50 GPCD

### Storm Drain Cross Connection Removal

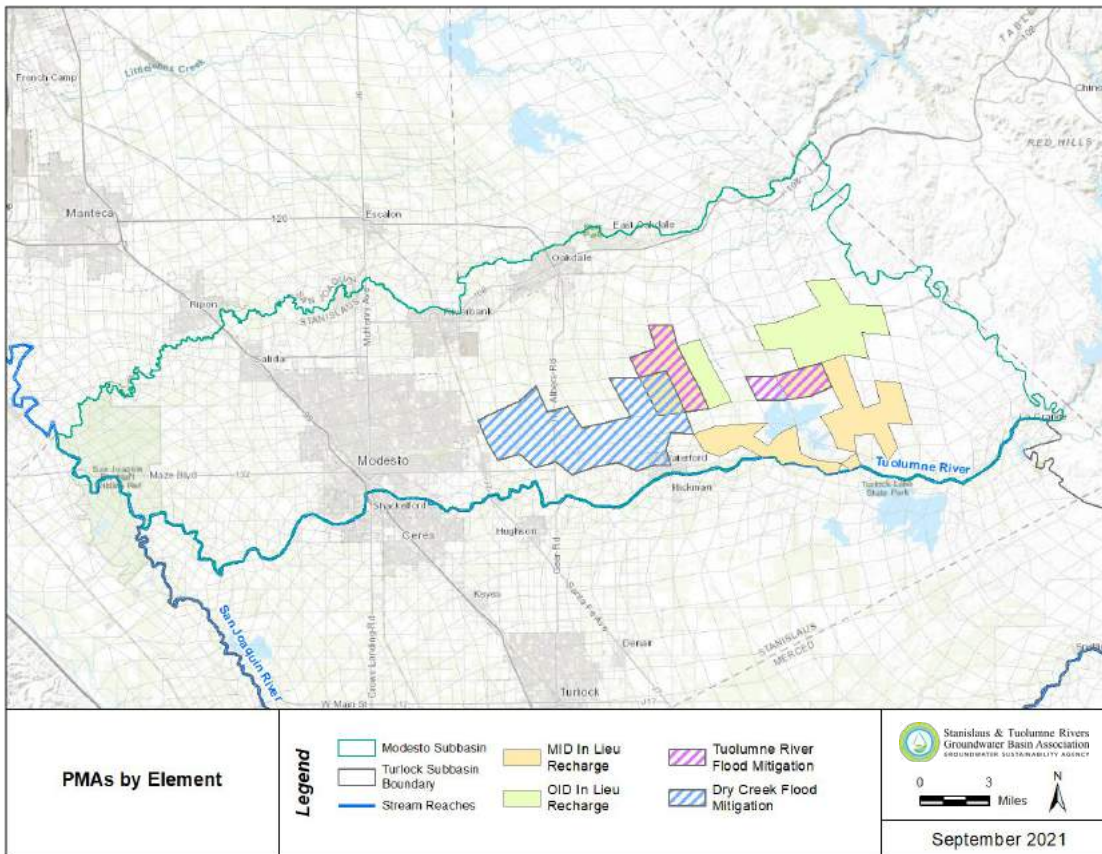
- Recharge facilities in MOD
- Up to 248 AFY

### Waterford/Hickman

- 900 AFY of surface water from Modesto ID
- Reduced municipal pumping

# MODESTO SUBBASIN PROJECTS

## DIRECT AND IN-LIEU RECHARGE



Scenario	Project	Direct Recharge	In-Lieu Recharge
In-lieu Recharge Projects	MID to Out-of-District Lands In-lieu and Direct Recharge Project	9,600	19,200
	OID to Out-of-District Lands In-lieu and Direct Recharge Project	1,400	13,000
	<b>In-lieu Recharge Projects</b>	<b>11,000</b>	<b>32,200</b>
Flood Mitigation Projects	Tuolumne River Flood Mitigation Project	9,600	
	Dry Creek Flood Mitigation Project	5,400	
	<b>Flood Mitigation Projects</b>	<b>15,000</b>	
<b>ALL</b>	<b>All Projects</b>	<b>26,000</b>	<b>32,200</b>

**Note:** All values are in acre-feet per year and represent the average annual yield over the 50-year simulation period

# MODESTO SUBBASIN PROJECTS

## LAND & WATER USE BUDGET

		Baseline	Sustainable Yield	Scenario 1	Scenario 2	Scenario 2 Impact
Urban Water Use	Urban Demand	111,000	111,000	98,200	98,200	-12,800
	Urban Surface Water	51,100	51,100	51,800	51,800	700
	Urban Pumping	59,900	59,900	46,400	46,400	-13,500
Agricultural Water Use	Ag. Demand	503,800	449,700	503,800	503,800	0
	Ag. Surface Water Deliveries	266,500	266,500	266,500	298,700	32,200
	Ag. Private Agricultural Pumping	237,300	183,200	237,300	205,100	-32,200
Other	Canal, Reservoir, & Direct Recharge	47,300	47,300	47,500	73,500	26,200
	Agricultural Agency Pumping	23,800	23,800	23,800	23,800	0

**Net-Operational Yield      71,900  
acre-feet per year**

Impact = Scenario - Baseline



# MODESTO SUBBASIN PROJECTS

## GROUNDWATER BUDGET

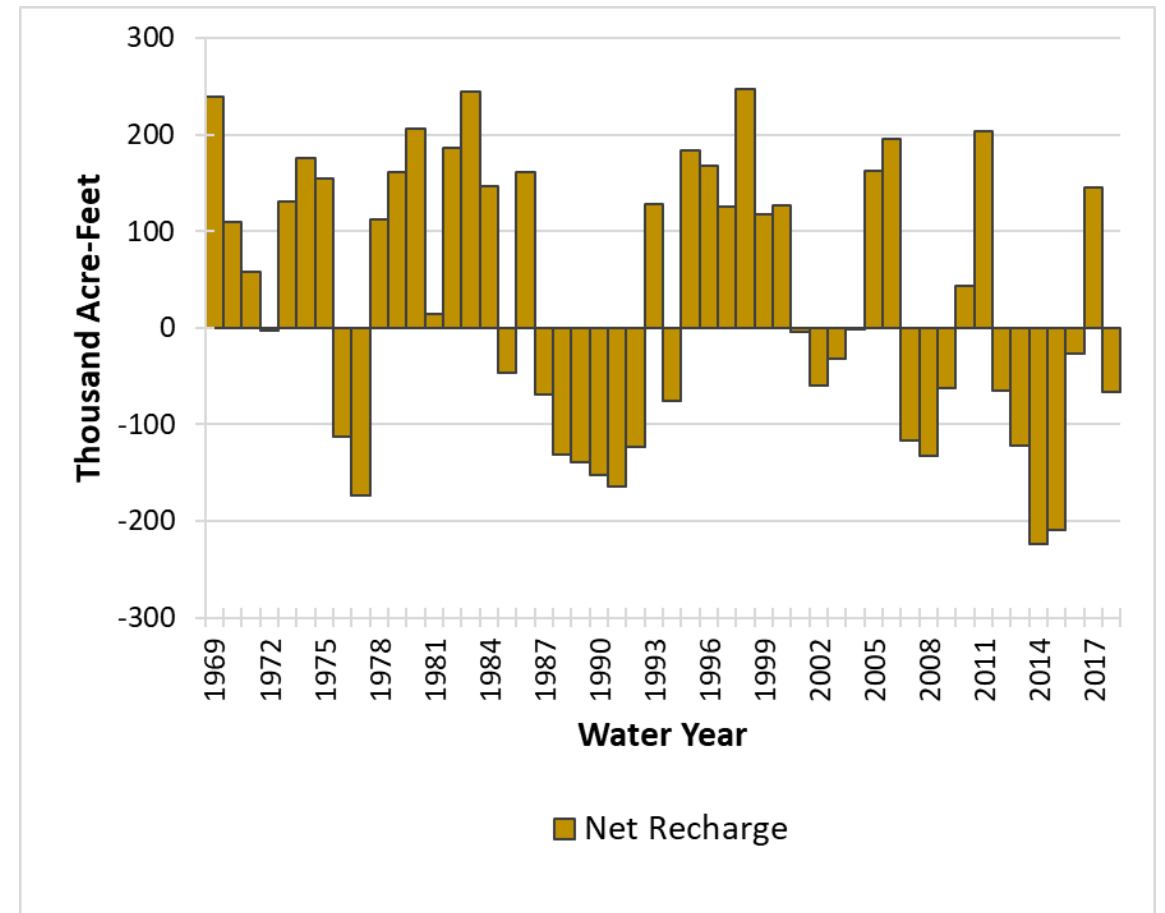
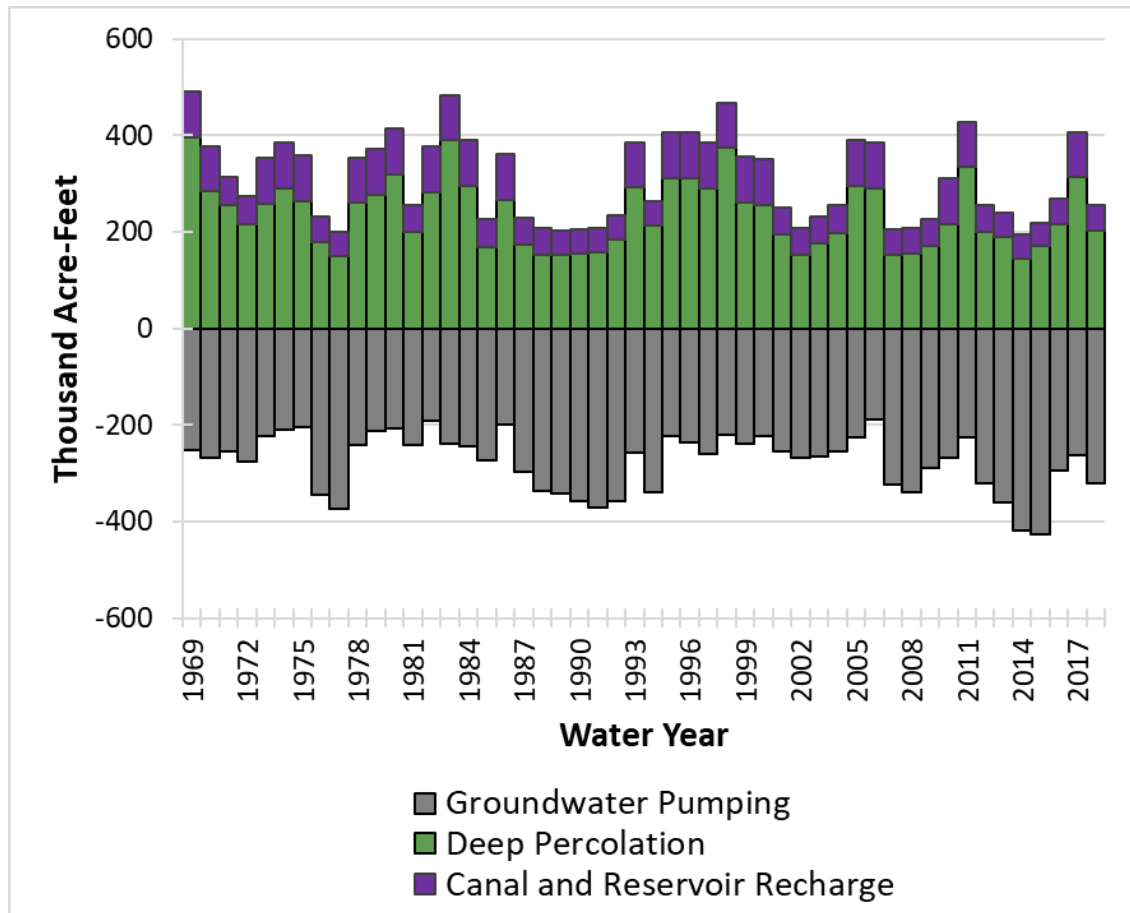
	Baseline	Sustainable Yield	Scenario 1	Scenario 2	Scenario 2 Impact
Deep Percolation	234,900	212,500	230,100	235,800	+900
Canal, Reservoir, and Direct Recharge	47,300	47,300	47,500	73,500	+26,200
Net Stream Seepage	24,300	-13,300	18,800	-4,100	-28,400
Inflow from Foothills	9,300	9,300	9,300	9,300	0
Net Subsurface Flow from Adjacent Subbasins	-5,900	-11,200	-7,600	-36,500	-30,600
Groundwater Pumping	321,000	226,900	307,600	276,600	-44,400
Groundwater Storage Deficit	11,000	-100	9,500	-1,400	-12,400

**Net-Overdraft -1,400  
acre-feet per year**

Impact = Scenario - Baseline

# MODESTO SUBBASIN PROJECTS

## OPERATIONAL WATER BUDGET

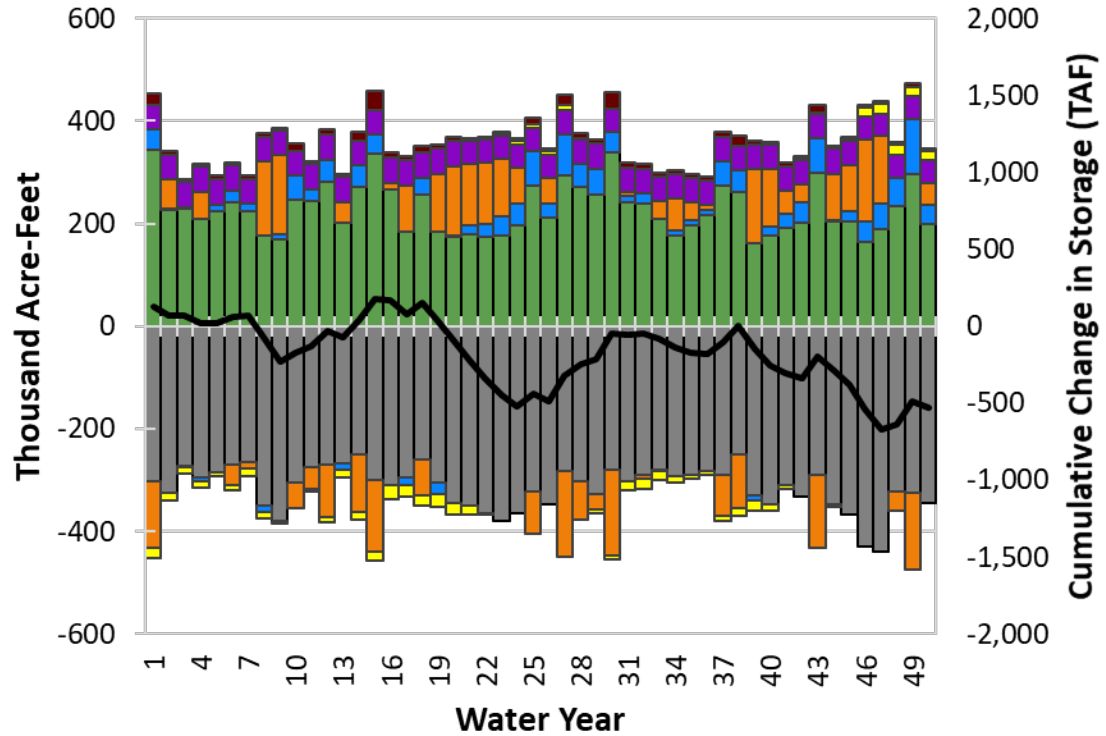




# MODESTO SUBBASIN PROJECTS

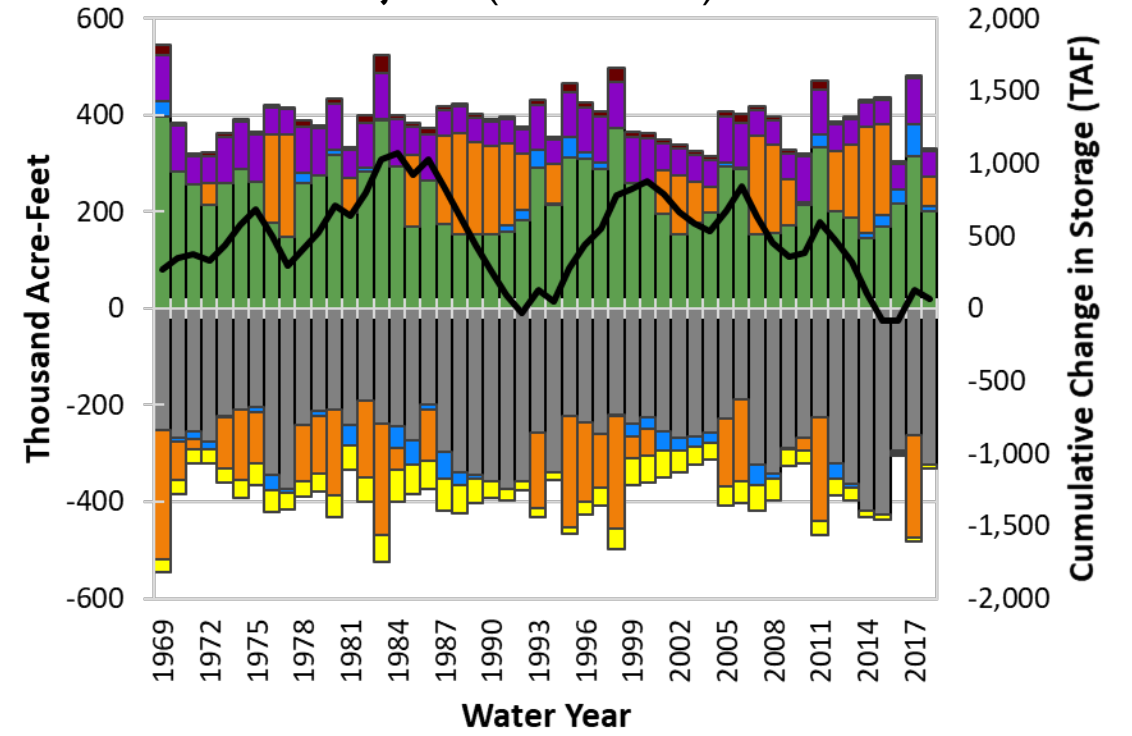
## GROUNDWATER BUDGET

Baseline



- Inflow from Foothills
- Canal and Reservoir Recharge
- Stream/Aquifer Interaction
- Groundwater Pumping
- Subsurface Flow from Adjacent Areas
- Change in GW Storage
- Deep Percolation
- Cumulative Change in Storage

Projects (Scenario 2)



- Inflow from Foothills
- Canal and Reservoir Recharge
- Stream/Aquifer Interaction
- Groundwater Pumping
- Subsurface Flow from Adjacent Areas
- Change in GW Storage
- Deep Percolation
- Cumulative Change in Storage



# MODESTO SUBBASIN REVISED GSP

## MANAGEMENT ACTIONS

# MANAGEMENT ACTIONS

- Present a commitment in Revised GSP, highlighting progress towards project implementation and a dedication to sustainability regardless of hydrologic uncertainty or project timeline/outcome.
- Refinement of Existing Projects and Management Actions
  - Develop and prioritize robust management actions (such as demand management) that could be readily implemented as needed, along with existing projects, to ensure sustainability regardless of hydrologic uncertainty or project outcome.
    - “**commit** to take these actions...**provide details** clarifying when any particular GSA’s adaptive management approach would **trigger** increased actions...”
    - “...present **detailed tasks**, **milestones**, and **timelines** depicting how these projects will be completed and implemented...”

# GROUNDWATER ALLOCATION FRAMEWORK

## EXAMPLE ALLOCATION FRAMEWORK

1. Determine **sustainable yield** of the Subbasin.
2. Account for special use to obtain sustainable yield of native water.
  - **SGMA Exemptions** (federal and de minimis users)
  - **Local Refinements** (developed supply, disadvantaged communities, etc.)
3. Allocate remaining sustainable yield of native water.
  - **Overlying Users** based on acreage
  - **Appropriative Users** based on historical use
4. **Establish framework** as basis for basin-wide management.
  - Determine triggers, impacts, and other management conditions.

# GROUNDWATER ALLOCATION FRAMEWORK

## STEP I: DETERMINE SUSTAINABLE YIELD OF THE SUBBASIN

**Sustainable Yield = long term average annual groundwater pumping sustainable without causing undesirable results**



**267,000 AF\***

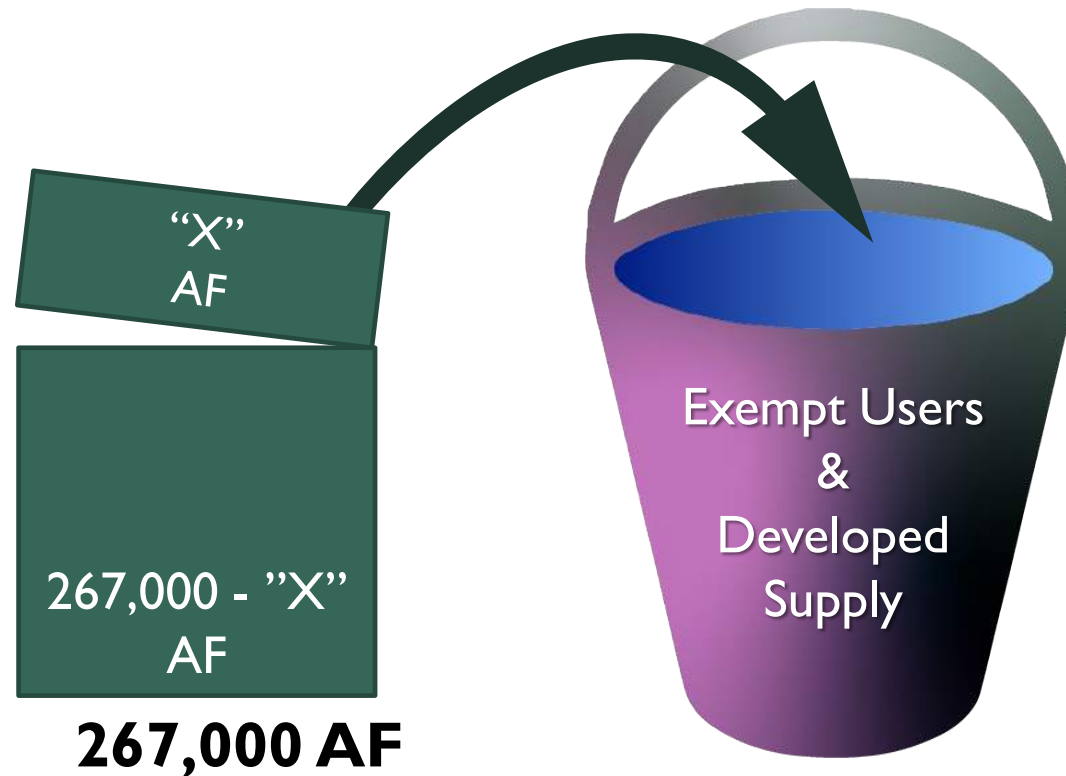
**\*Estimated using C2VSim™ model simulations. Future refinements will consider effects to minimum thresholds and undesirable results.**

# GROUNDWATER ALLOCATION FRAMEWORK

## STEP 2: ACCOUNT FOR SPECIAL USE TO OBTAIN SUSTAINABLE YIELD OF NATIVE WATER

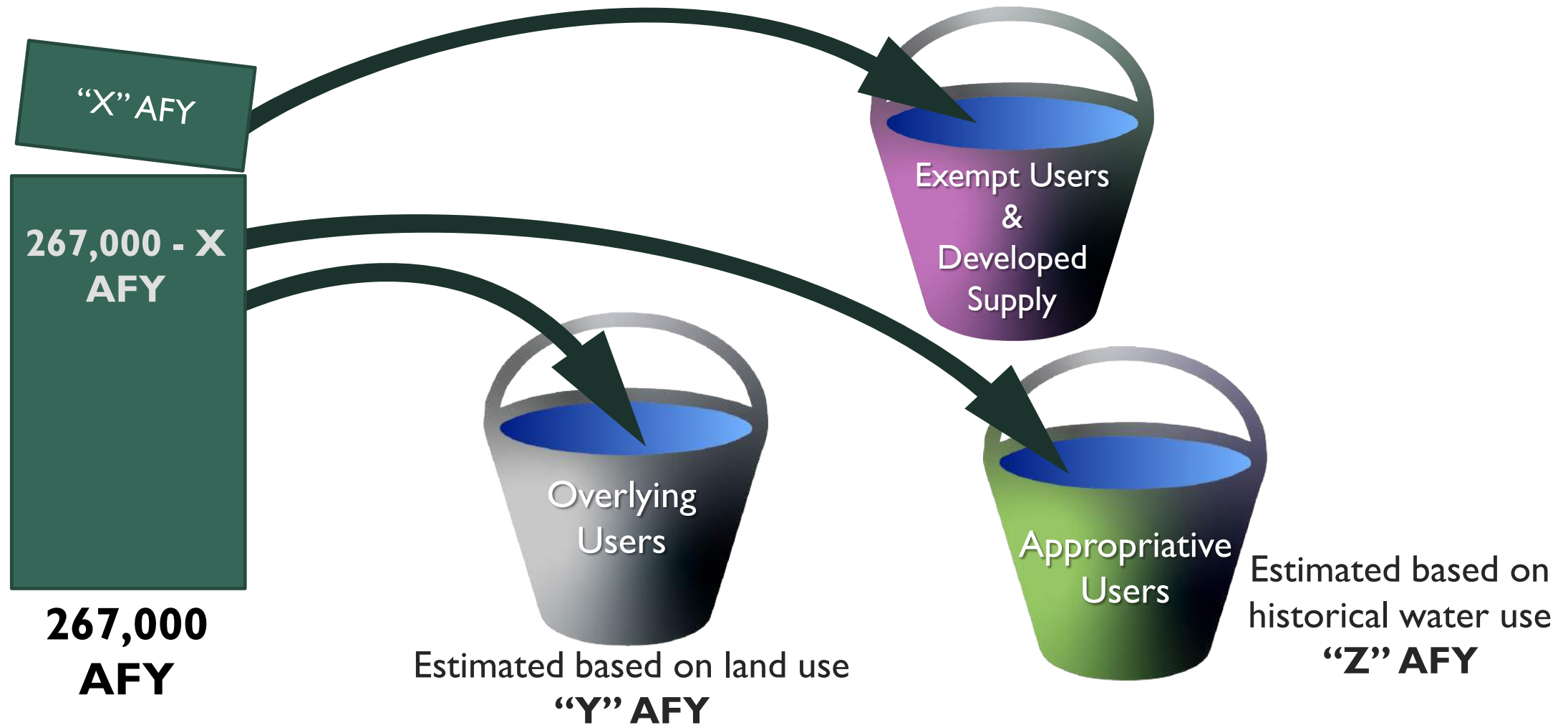
### Estimate exempt users and developed supplies

**Sustainable Yield = long term average annual groundwater pumping sustainable without causing undesirable results**



# GROUNDWATER ALLOCATION FRAMEWORK

## STEP 3: ALLOCATE REMAINING SUSTAINABLE YIELD OF NATIVE WATER





# GROUNDWATER ALLOCATION FRAMEWORK

## STEP4: ESTABLISH FRAMEWORK AS BASIS FOR BASIN-WIDE MANAGEMENT

### **Identify and outline program variables:**

- Yield available for allocation
- Accounting of imported water supply
- Establish historical period for appropriative users
- Active vs dormant allocation for overlying users.

### **Design adaptive management policies:**

- Account for uncertainty by developing triggers and resulting actions.
- SMCs – groundwater levels and storage, stream conditions, subsidence.



# DISCUSSION

# DWR Deficiency #2 - Feasible Path to Achieve Sustainability

GW level decline needs to be arrested before 2027 IMs

## Proposed GSA Action:

- Draft Resolutions for STRGBA GSA and Tuolumne County GSA, committing to the development of a Well Mitigation Plan and Management Actions in the subbasin.
- Resolutions provided to STRGBA GSA members with the next GSA Meeting Agenda. Member agencies need to be prepared to take action at 6/12/24 GSA Meeting.
- Approved & signed resolutions to be included as an attachment in the GSP along with member agency Board/Council resolutions adopting the final Revised GSP.

# Resolution/MOU Content & Requirements

Resolution will show firm commitment by the STRGBA GSA before water levels reach the 2027 IMs to develop and implement:

- Well Mitigation Plan
  - Funding - Amount and Source(s)
  - Implementation Deadline/Threshold – January 31, 2026?
- Management Actions
  - Demand Reduction Measures
  - Funding – Amount TBD and Source(s)
  - Implementation Deadline/Threshold – January 31, 2026?

Management Actions as noted in the GSP may include, but are not limited to:

- Groundwater allocations and pumping management program
- Groundwater extraction and surface water reporting program
- Groundwater extractions fees
- Groundwater pumping credit market and trading program
- Voluntary conservation/land following program
- Conservation practices