



Colusa Subbasin GSP Revisions

Joint Technical Advisory Committee Meeting

February 9, 2024

Agenda

- 1. Introductions and Timeline**
- 2. Takeaways from DWR Meetings (through 01/22) and Joint GSA Board Direction**
- 3. Proposed Revisions:**
 - 1. Projects and Management Actions (PMAs)**
 - 2. Groundwater Level SMC**
 - 3. Subsidence Monitoring and SMC Basis**
- 4. Next Steps**

Introductions

Thad Bettner, PE (Strategic Advisor)

Dauids Engineering (Technical Team)

West Yost (Technical Team)

Timeline

Feb 2024	02/09 – Joint TAC Meeting 02/16 – DWR Meeting #3 02/23 – Joint Board Meeting
Mar 2024	03/08 – Joint TAC Meeting TBD – DWR Meeting #4 03/22 – Joint Board Meeting 03/27 – Draft Revised GSP for Review
Apr 2024	04/09 – Comments on Draft Revised GSP 04/12 – Joint GSA Board Meeting (Review Draft Revised GSP and Comments) 04/16 – Final Revised GSP Released 04/19 – Joint GSA Board Meeting (Adopt Revised GSP) 04/22 – Submit Revised GSP

Takeaways from DWR Meetings (through 01/22) and Joint GSA Board Direction

Deficiencies As Outlined in DWR's Review Letter

1. **Overdraft:** “The GSP does not include a reasonable assessment of overdraft conditions and reasonable means to mitigate overdraft.”
2. **Groundwater Levels:** “The GSP does not establish sustainable management criteria (SMC) for chronic lowering of groundwater levels in a manner substantially compliant with the GSP regulations.”
3. **Subsidence:** The GSP does not establish SMC for land subsidence in a manner substantially compliant with the GSP regulations.

Our discussions are focused only on these deficiencies and the efforts needed to resolve these sufficiently.

Takeaways from DWR Meetings (12/19 and 01/22)

- DWR's main concerns, priorities:
 - Existing conditions don't indicate the subbasin is on track to reach sustainability.
 - Undesirable results (URs) must be justified (DWR senses that URs have happened).
- GSP revision approaches are on the right conceptual track, but:
 - PMAs are needed to mitigate overdraft, subsidence and groundwater level decline.
 - Actions are warranted immediately.
- **The revisions should focus on:**
 - **Developing management actions as backstops to address overdraft, GW conditions.**
 - **Revising the SMC for more justifiable URs, minimum thresholds (MTs).**

Approaches Discussed with DWR and Joint Board Direction

■ Overdraft

- Move forward with overdraft revisions based on groundwater levels (Annual Report approach)
- Provide for recurring evaluation each year (Annual Report)

■ PMAs

- Projects (*lower priority*): Update available details on timeline, benefits
- Management Actions (*higher priority*): “Formal Agreement” approach
 - Understand that approach is conceptually suitable, but need to provide sufficient detail
 - Prepare draft “Formal Agreement” content to review with GSAs, DWR

■ SMC Revisions: *Prepare recommendations*

- Groundwater levels and subsidence:
 - Revise URs, MTs to represent “unreasonable” conditions, with justification
 - Clarify relationship between groundwater level SMC and subsidence
- Subsidence-specific:
 - No ongoing subsidence after 2042 (SGMA requirements)
 - More frequent subsidence monitoring vs. SMC (InSAR)
 - Evaluate subsidence impacts to critical infrastructure

Focus Today



Focus in Next Meeting



Proposed Revisions: Projects and Management Actions (PMAs)

Approach for PMA Revisions

- **Project Updates (Lower Priority)**
 - Add details to clarify **Planned/Ongoing Projects** (coordinating with proponents)
 - Add new project details (from Annual Reports, recent grants/grant applications)

- **Management Action Updates (Higher Priority)**
 - Propose, refine, and sign “**formal agreements**” to develop and implement programs
 - Domestic well mitigation
 - Demand management/reduction (mitigating overdraft, subsidence)
 - Moving forward with GSA staff/chairs/counsel to draft program details, review with DWR
 - **Discuss certain technical details with Joint TACs**

Domestic Well Mitigation Program

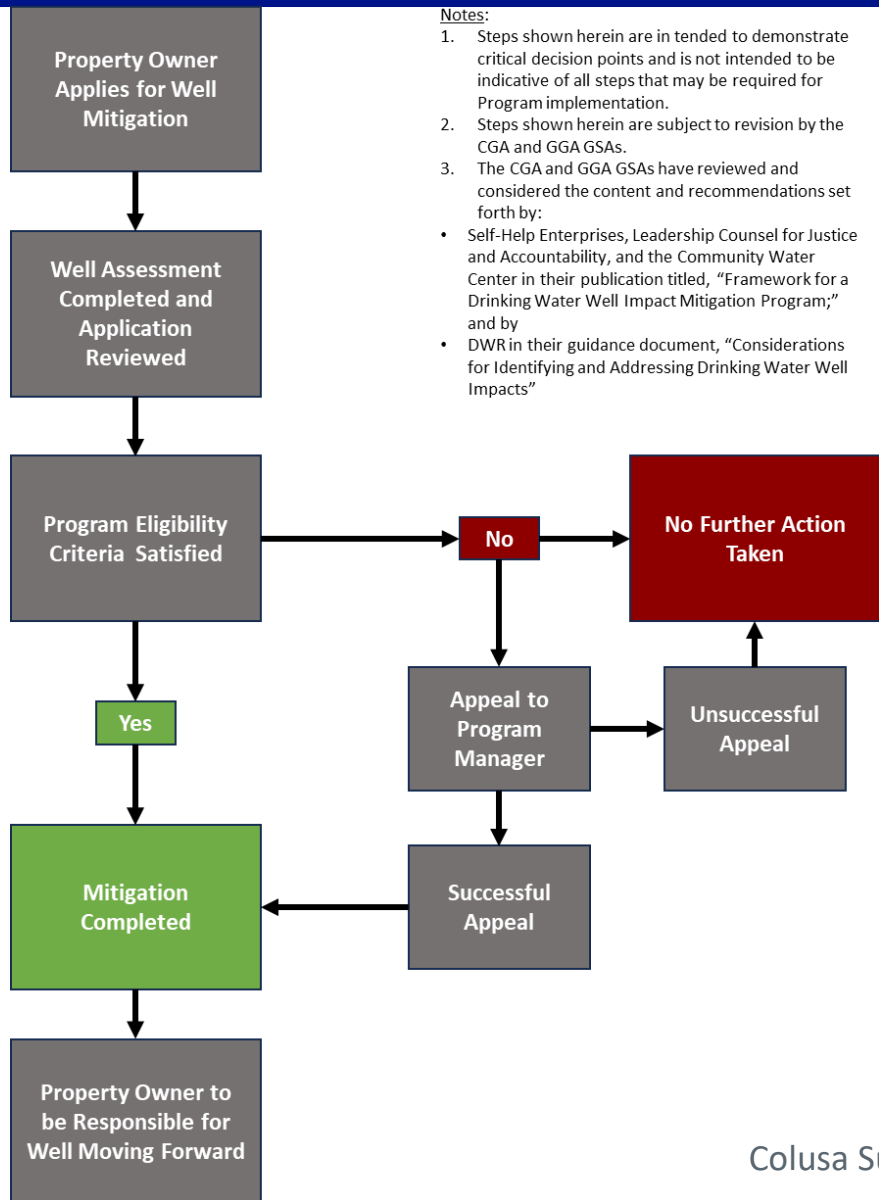
■ Potential Program Measures:

- Short-term solutions in emergencies, e.g., delivery of bottled water and/or water tanks
- Deepening existing wells, or otherwise rehabilitating **or replacing wells (including abandonment of existing wells) (added since 02/09 meeting)**.
- Lowering pumps in existing wells, or replacing pumps in existing wells.
- Well consolidation (many to one).
- Connection to or development of public water systems to serve impacted communities.
- Connection to municipal water systems.

■ Considerations:

- Program is a temporary fix before achieving sustainability (2042)
- Conduct a well evaluation process to determine appropriate mitigation measures (structured form to verify the well impacts/causes, eligibility, preferred solution)
- Mitigate only once per well (permanent solution under the GSP, e.g., drill deeper than MTs)
- Potentially coordinate program with well permitting/ordinances to minimize well impacts
- **Coordinate with counties, other programs in Subbasin (added since 02/09 meeting)**

Domestic Well Mitigation Program Development



Notes:

1. Steps shown herein are intended to demonstrate critical decision points and is not intended to be indicative of all steps that may be required for Program implementation.
2. Steps shown herein are subject to revision by the CGA and GGA GSAs.
3. The CGA and GGA GSAs have reviewed and considered the content and recommendations set forth by:
 - Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center in their publication titled, "Framework for a Drinking Water Well Impact Mitigation Program;" and by
 - DWR in their guidance document, "Considerations for Identifying and Addressing Drinking Water Well Impacts"

▪ **Items to consider in Program development:**

- Program application process *(left)*
- Public outreach (added since 02/09 meeting)
- Eligibility criteria (property/property owner)
- Preferred contractors (reputable services)
- Initial well evaluation
- Program form development (participation terms, agreement, education process/requirement)
- Priority (first-come-first-served)
- Eligible mitigation (supply focused) vs. non-eligible services (landscaping, ongoing maintenance, etc.)
- Mitigation award (how costs will be reviewed/approved)
- Recordation of mitigation award
- Coordination with counties, other programs (added since 02/09 meeting)
- Post-mitigation responsibility (property owner to be responsible for well moving forward)

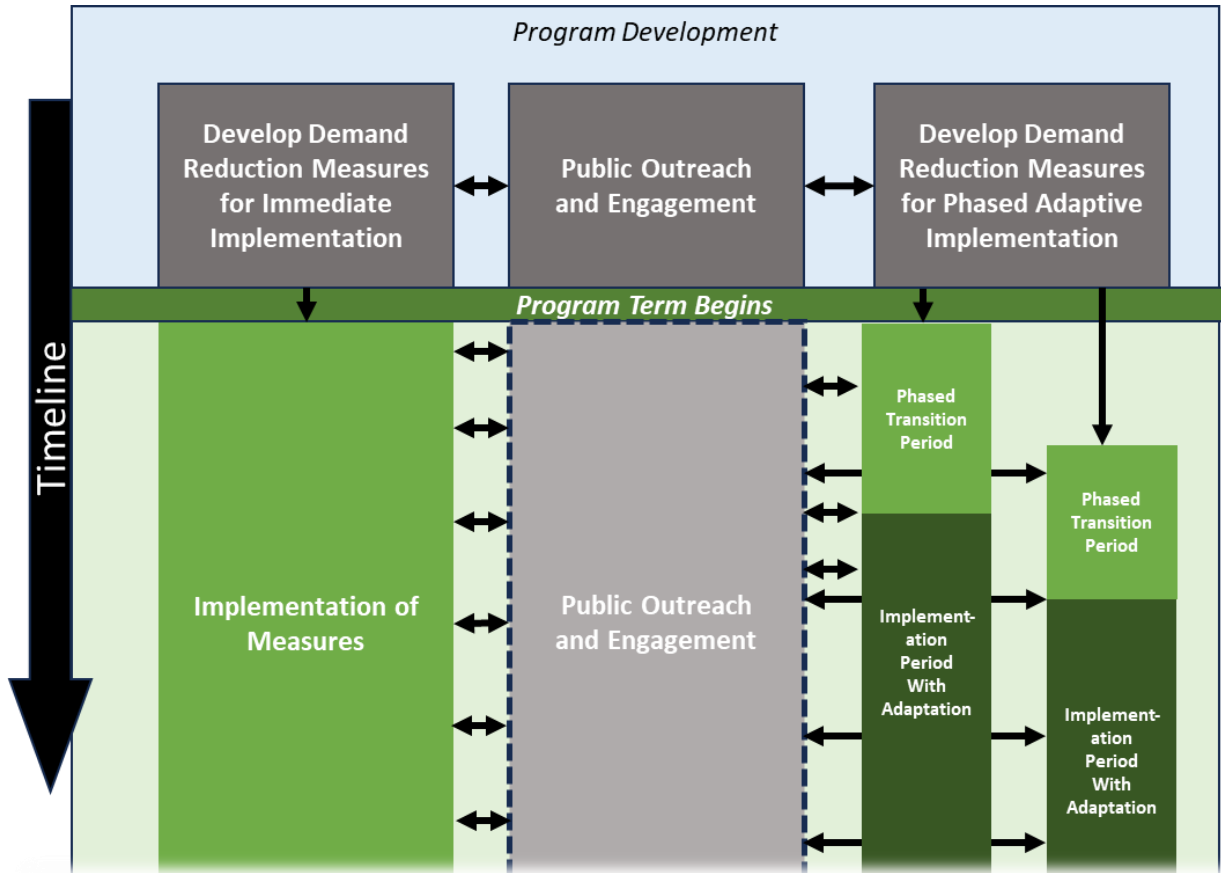
▪ **Understand we do not need to make all these decisions now, but provide details on how we will work through these decisions (to be confirmed with DWR on 02/16)**

▪ **Recommendation to the Boards on considerations?**

Demand Management Program

- **Potential Program Measures:**
 - **Immediate Implementation** (at Program start date)
 - Voluntary measures for reducing demand
 - Dry farming
 - Fallowing
 - Incentivized land use changes
 - Multi-benefit land repurposing (e.g., recharge basins, renewable energy, habitat, recreation)
 - Best management practices (agronomic practices, soil management, runoff capture)
 - Water conservation (focus on activities to reduce consumptive use/extraction)
 - **Phased Adaptive Implementation** (prepare to implement, commensurate with issues)
 - Allocations
 - Water market/trading and/or fee structures
 - Allocation of extracted vs consumed groundwater
 - Phased transition period toward sustainable yield
 - Land use/zoning restrictions, in coordination with the Counties

Demand Management Program Development



Notes:

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2. Steps shown herein are subject to revision by the CGA and GGA GSAs.

Items to consider in Program development:

- Program implementation process (*left*)
- Public outreach and engagement process
- Coordination with existing programs
- Implementation of phased measures
 - Area(s) where measures are applicable
 - Sustainable yield for those areas
 - Transition period from current → sustainable conditions
 - Process and timeline for evaluating, adapting measures
 - Specific considerations, for example:
 - Allocation of consumed vs. extracted groundwater?
 - Land use restrictions on new or existing uses?
 - Monitoring/enforcement process

Implementation of phased measures

– Funding/financing

- **Understand we do not need to make all these decisions now, but provide details on how we will work through these decisions (*to be confirmed with DWR on 02/16*)**

- ***Recommendation to the Boards on considerations?***

Proposed Revisions: Groundwater Level (GWL) SMC

Groundwater Level (GWL) SMC: Deficiency Recap

- “The GSP does not establish SMC for chronic lowering of groundwater levels in a manner substantially compliant with the GSP regulations.”

- **Key Needs:**

- Clearly justify how URs and MTs represent significant and unreasonable conditions, especially for domestic well users and GDEs, and why conditions before then do not. *(Likely requires rephrasing UR definitions and revising MTs.)*

- Show clear consideration of PMAs that will supply alternate supplies of water and mitigate impacts to domestic wells (e.g., municipal connections, well mitigation).

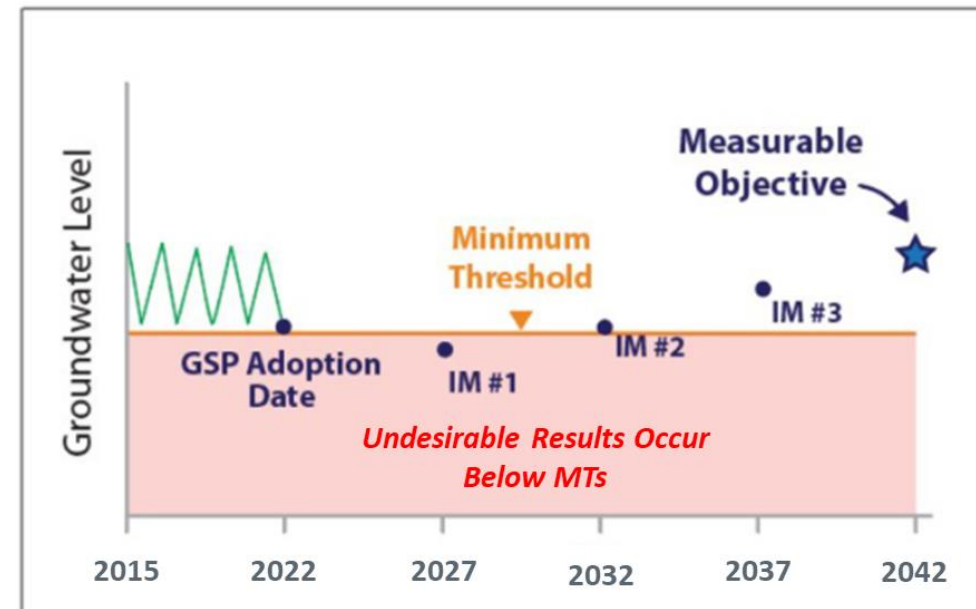
- Clarify relationship between GWL SMC and subsidence, if revised GWL SMC are lower than historical (pre-SGMA) levels.

GWL SMC: Undesirable Results (URs)

- Need to update UR definitions:
 - Describe what URs are (what conditions are significant/unreasonable) and impacts to beneficial users
 - Justify criteria for identifying (e.g., MT values and exceedance)
- Current Definition (Jan 2022):
 - “A result that would cause significant and unreasonable reduction in the long-term viability of beneficial uses and users over the planning and implementation horizon of this GSP.”
 - “...Experienced if sustained groundwater levels are too low to reasonably satisfy beneficial uses/users”
 - “Significant/unreasonable” number of dry wells
 - “Significant/unreasonable” reduction in pumping capacity
 - “Significant/unreasonable” need for deeper wells, lower pumps
 - Adverse impacts to environment
- **Need clarity - At what GWL do these conditions occur? (consider conditions in 2020-2022)**

GWL SMC: Proposed Revisions to URs

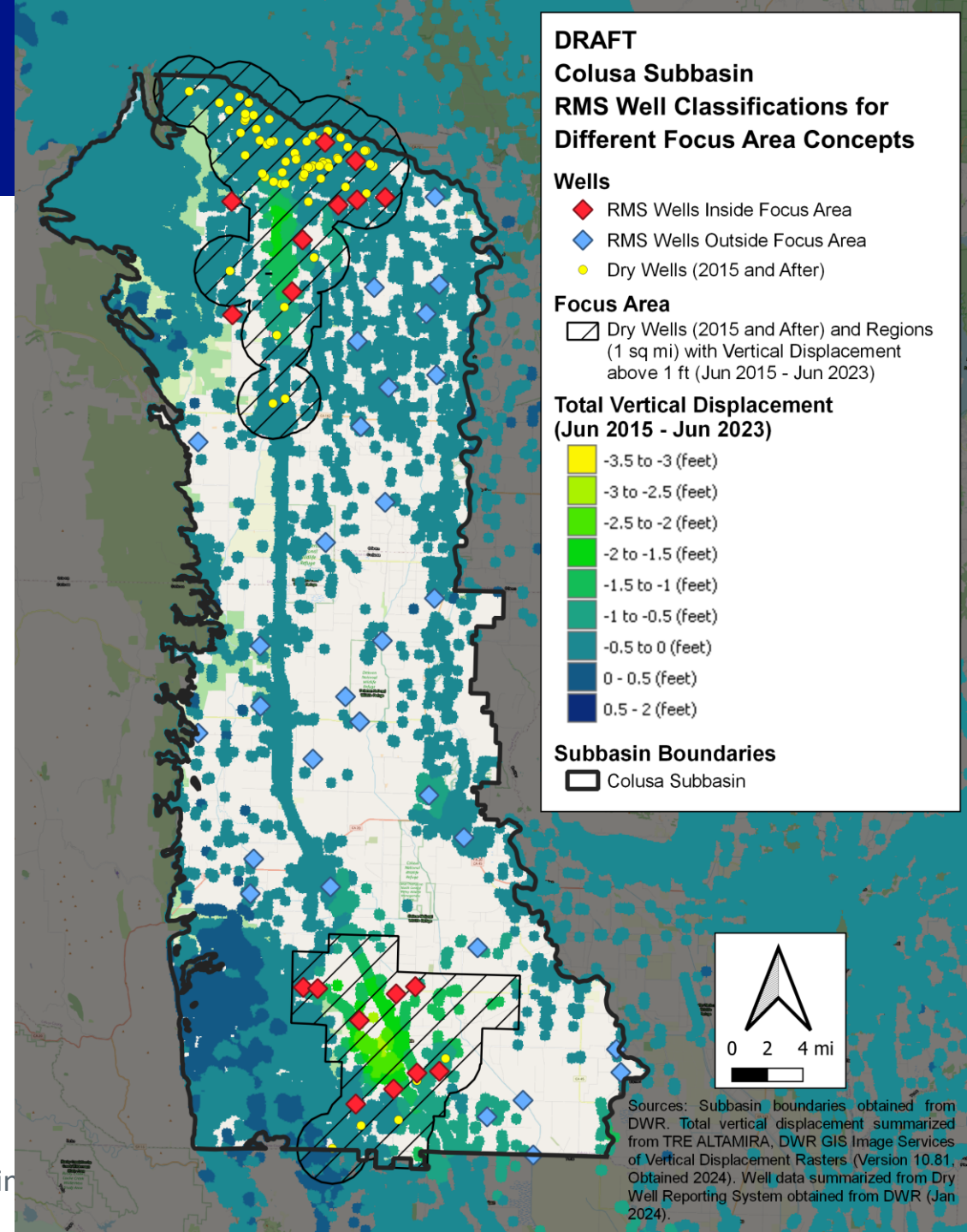
- Revise definition to speak to conditions that occurred in 2020-2022:
 - Dry wells at rates observed in 2020-2022
 - Reduction in pumping capacity as observed in 2020-2022
 - Need to deeper wells, lower pumps as observed in 2020-2022
 - Adverse impacts to the environment
- Provides clearer, justifiable basis for:
 - Explaining impacts to beneficial uses and users (e.g., domestic well impacts that were observed)
 - Connection to subsidence (i.e., subsidence that was observed)
 - MTs that represent where those conditions begin to occur (look at GWL in 2020-2022)



Source: DWR, 2017. Sustainable Management Criteria Best Management Practices.

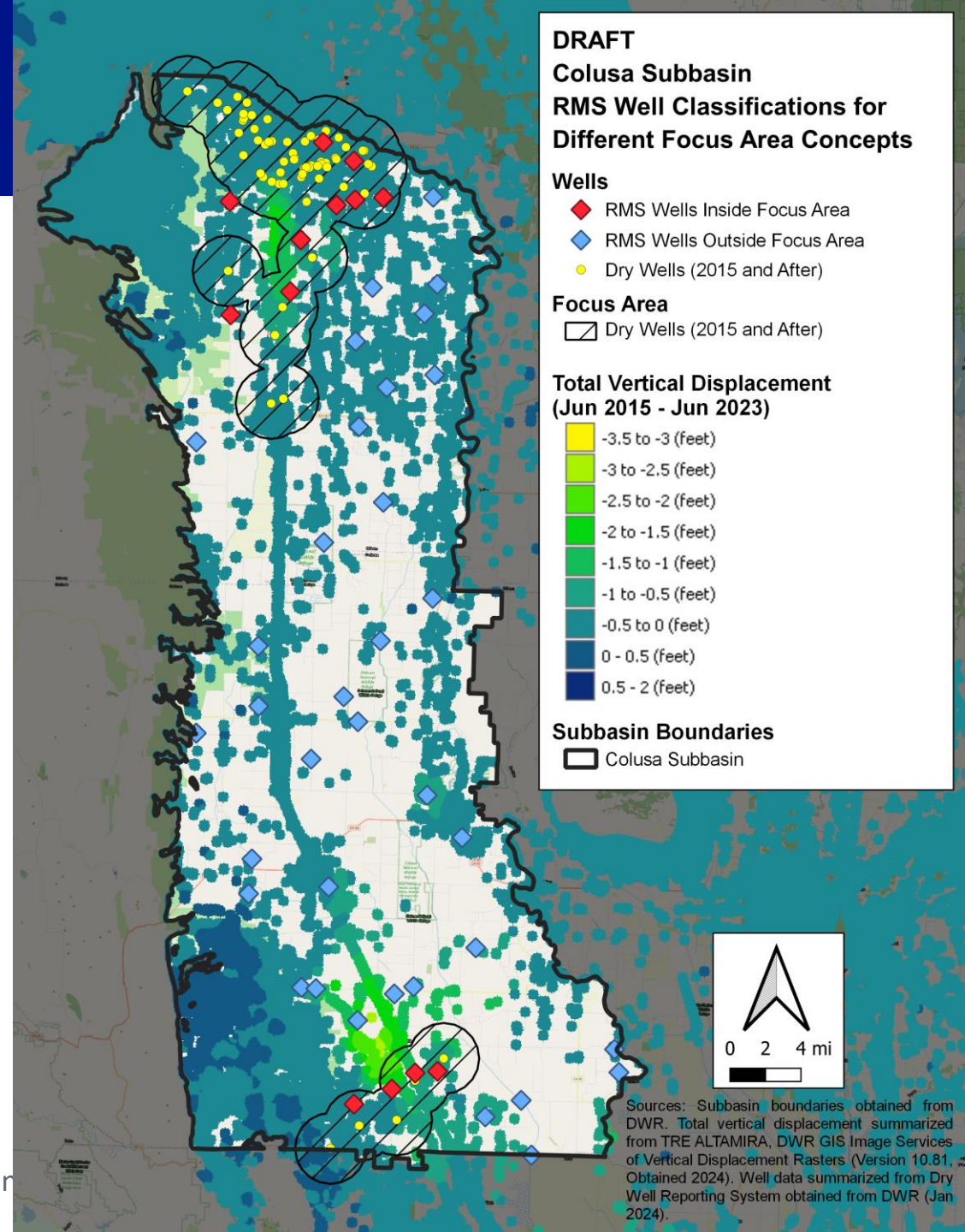
GWL SMC: Proposed Revisions to SMC

- **Minimum Thresholds (MTs):** Based on 2020-2022 GWL data
 - **Areas with dry wells and/or subsidence since 2015** (Within “Focus Areas”): **2020-2022 low**
 - **Areas without dry wells and/or subsidence since 2015** (Outside “Focus Areas”): **2020-2022 low + 10 ft deeper (margin)**
 - Considerations:
 - Already know the conditions those years (undesirable, challenging period)
 - Some wells do not have 2020-2022 data, use earlier period where needed (e.g., 2015-2022 low)
- **Measurable Objectives (MOs):** Avg. pre-SGMA GWL (2011-2013)
- **Interim Milestones (IMs)** bridging MTs → MOs



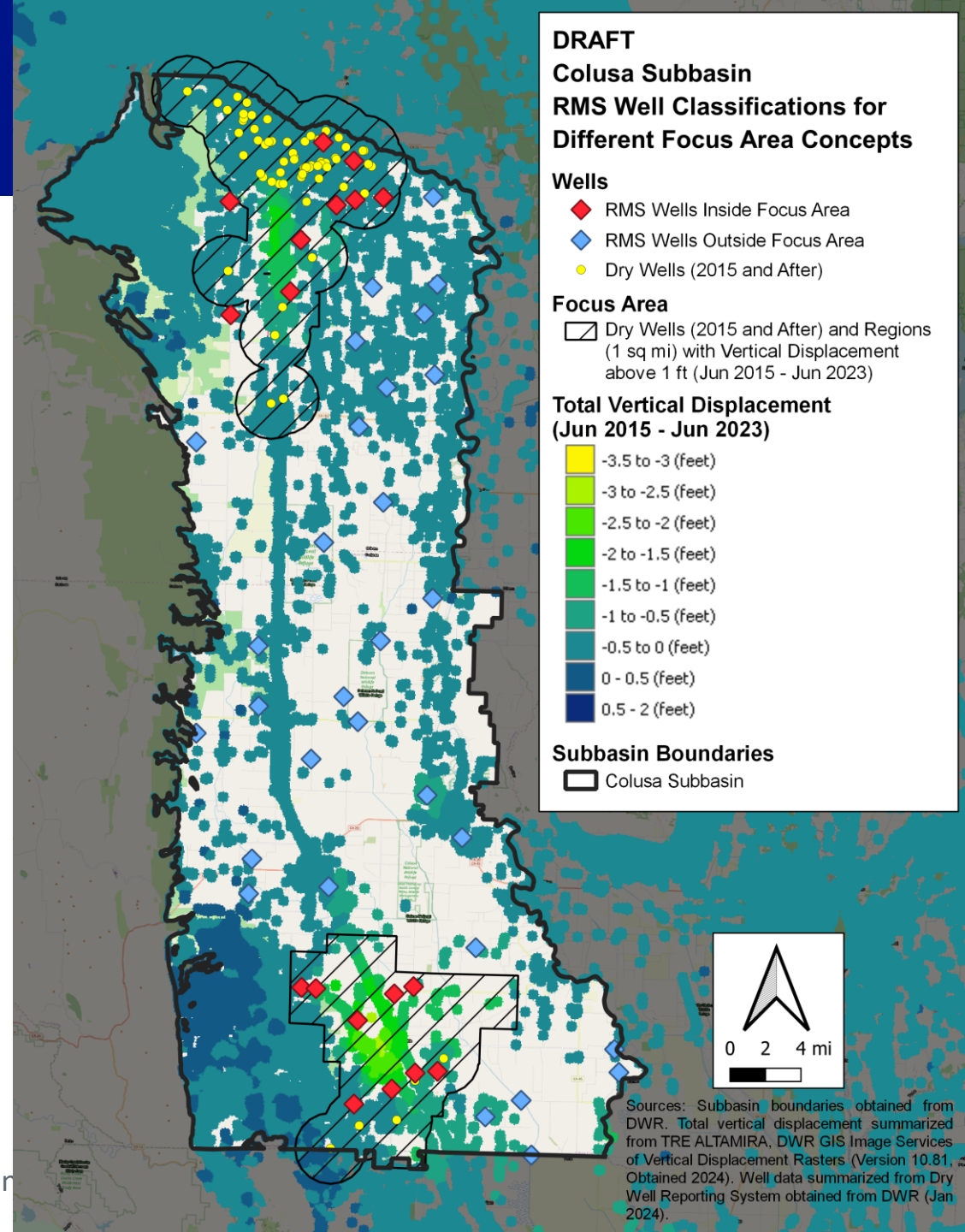
GWL SMC: MT Revisions and Focus Areas

Focus Area Concepts	Inside Focus Area (More Protective)	Outside Focus Area (Margin of Flexibility)
Dry wells within 2 mi	2020-2022 min	2020-2022 min + 10 ft deeper (margin)
Dry wells within 2 mi, Subsidence >1 ft within 1 mi ²	2020-2022 min	2020-2022 min + 10 ft deeper (margin)
Dry wells within 2 mi, Subsidence >1 ft within 36 mi ²	2020-2022 min	2020-2022 min + 10 ft deeper (margin)



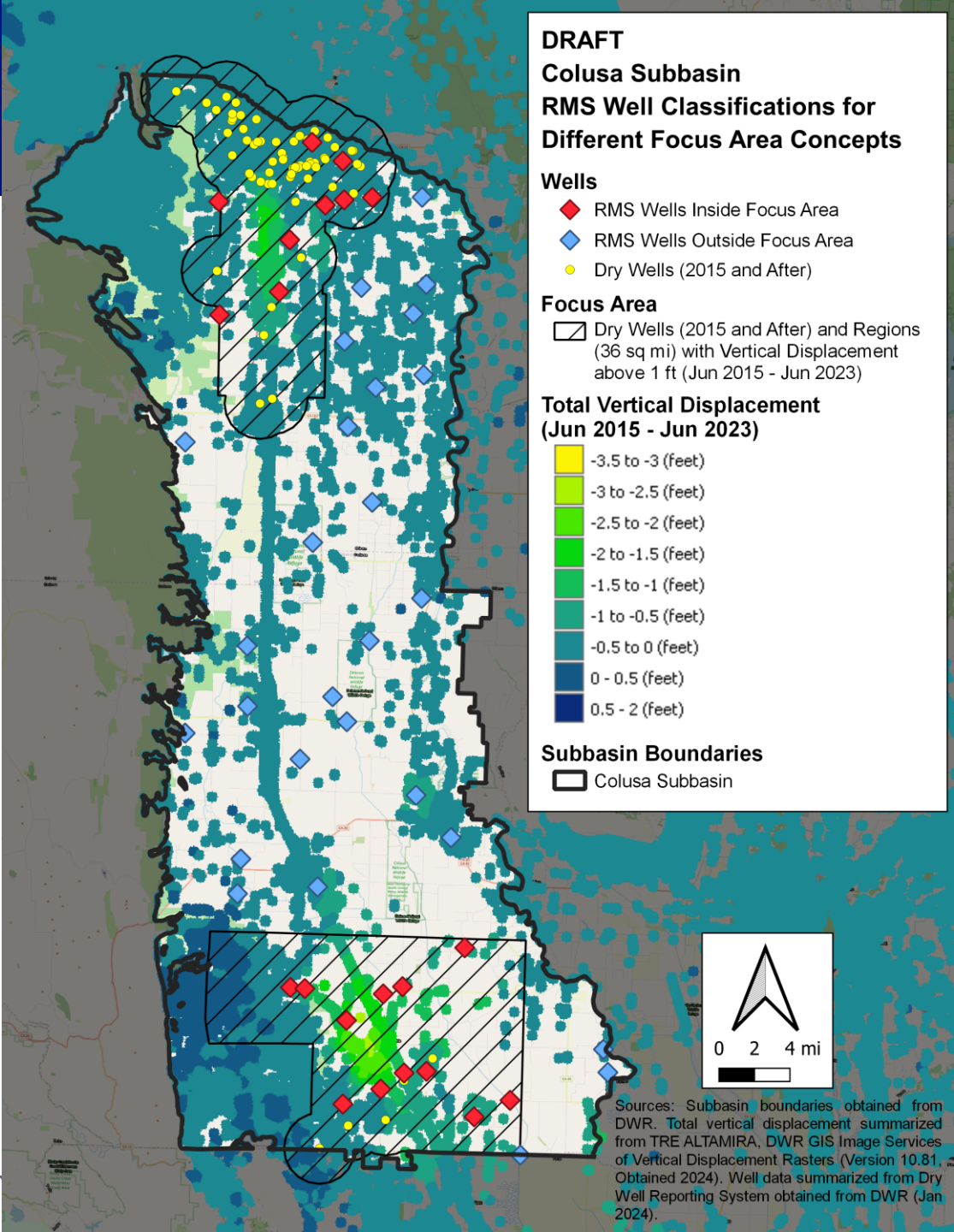
GWL SMC: MT Revisions and Focus Areas

Focus Area Concepts	Inside Focus Area (More Protective)	Outside Focus Area (Margin of Flexibility)
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Dry wells within 2 mi, Subsidence >1 ft within 36 mi ²	2020-2022 min	2020-2022 min + 10 ft deeper (margin)



GWL SMC: MT Revisions and Focus Areas

Focus Area Concepts	Inside Focus Area (More Protective)	Outside Focus Area (Margin of Flexibility)
Dry wells within 2 mi	2020-2022 min	2020-2022 min + 10 ft deeper (margin)
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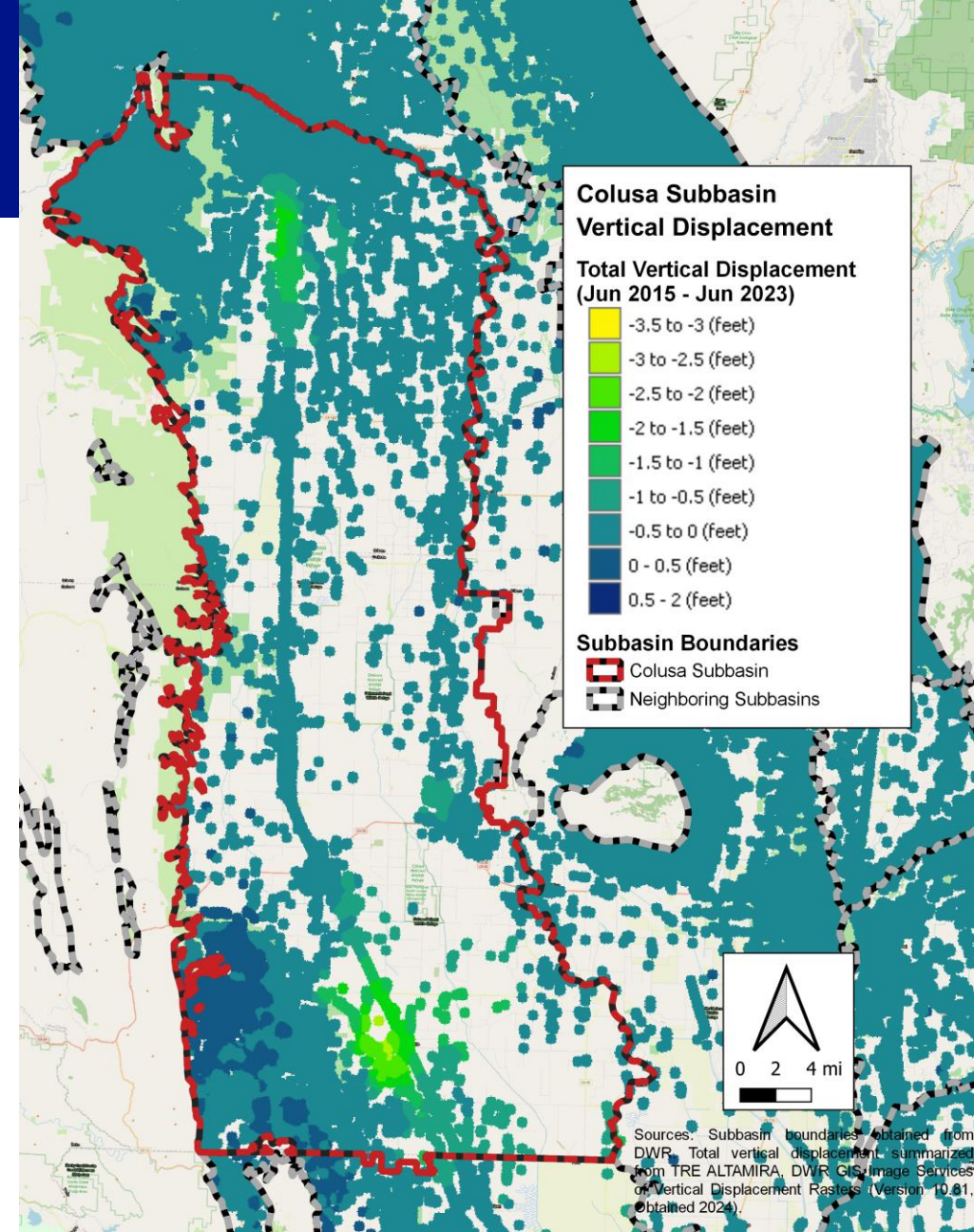


Proposed Approach: Subsidence Monitoring and SMC Basis

Subsidence Monitoring and SMC Basis

- Discussed SMC deficiencies with DWR, some immediate recommended revisions
- **Monitoring and SMC Basis:**
 - Currently based on Sacramento Valley Benchmark Network (last surveyed 2017)
 - **Revise monitoring and SMC based on InSAR***, until such a time as the benchmark network is surveyed
- **SMC Revisions**
 - **Revise SMC to clarify SGMA requirement of no subsidence past 2042** (+/- uncertainty each year, but no long-term subsidence over a multi-year averaging period)

* InSAR = Interferometric Synthetic Aperture Radar



Next Steps and Timeline

Next Steps and Timeline

- DWR Consultation Meeting #3 on 02/16
 - Discuss PMA details, proposed GWL SMC revisions
 - Receive feedback from DWR on acceptability
 - *Schedule final DWR meeting in March*
- CGA/GGA Joint Board Meeting on 02/23
 - Propose PMA details, GWL SMC revisions based on Joint TAC discussions and DWR feedback
 - Receive approval for approach
- Joint TAC Meeting on 03/08
 - Discuss subsidence SMC revisions, other topics as needed

