



Vina Groundwater Sustainability Agency  
308 Nelson Avenue, Oroville, CA 95965  
(530) 552-3592  
VinaGSA@gmail.com

## **Vina Groundwater Sustainability Agency (GSA) Stakeholder Advisory Committee (SHAC) Meeting**

Date: Wednesday, May 27, 2026

Time: 9:00 AM -12:00 PM

Location: Chico City Council Chamber, Conference Room #1, 421 Main Street, Chico, CA.

Or [Join the Vina GSA SHAC Meeting via Zoom](#)

Meeting ID: 814 0243 0033

Join via phone: +1 669 900 6833

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### **MEETING AGENDA**

May 27, 2026

1. **Call to Order and Roll Call**
2. **Business from the Floor**

The public and Stakeholder Advisory Committee (SHAC) members will have an opportunity to comment on items not on the agenda and that are relevant to the SHAC. Committee members and Management Committee staff are not required to respond to any issues raised during the public comment period. Commenters are asked to respect differing perspectives and to keep remarks within three minutes.

3. **\*Review and Approval of 4/22/2026 SHAC Meeting Minutes**

**Requested Action:** Approve the 4/22/2025 meeting minutes.

4. **\*Consideration of Groundwater Sustainability Plan Amendments to the Land Subsidence Sustainable Management Criteria (SMC) in response to the Department of Water Resources' Recommended Corrective Actions**

Staff will present an overview of draft proposed amendments related to the land subsidence monitoring network and SMC as provided in the attached memo for SHAC input and potential recommendation. **(Christina Buck, Asst. Director Butte County Water and Resource Conservation)**

**Requested Action:** Provide recommendations to the Vina GSA Board regarding:

1. The content presented of the land subsidence monitoring network and SMC
2. Whether to amend the identified sections of the Groundwater Sustainability Plan with the presented content

5. **\*Consideration of the Approach to Addressing Interconnected Surface Water (ISW) in the Periodic Evaluation in response to the Department of Water Resources' Recommended Corrective Actions**

Staff will provide an overview of the strawman proposal for addressing interconnected surface water in the Periodic Evaluation. SHAC will discuss the approach and may provide a recommendation to the Vina GSA board regarding the approach. (*Christina Buck, Asst. Director Butte County Water and Resource Conservation*)

**Requested Action:** Discussion and potential recommendation.

6. **Update on the Anticipated Timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation.** (*Report – Christina Buck, Asst. Director Butte County Water and Resource Conservation*)

7. **GSA Program Manager Update** (*Verbal Report – Dillon McGregor, GSA Program Manager and Management Committee Staff*)

- Update on the Butte County Environmental Health Division's Water Well Ordinance Update.
- Update on Interbasin Coordination
- Updates to Website

8. **SHAC Future Agenda Requests** – SHAC members may verbally request an item to be agendized at a future meeting. After stating what the item would be, a majority vote of the SHAC is needed in order for the Management Committee to agendize the item. SHAC members may also submit requests in writing to the GSA Program Manager to bring forward to the SHAC for consideration on a future agenda.

9. **ADJOURNMENT:**

The Committee will adjourn to their next meeting, **Wednesday, June 24, 2026.**

\*Materials included in agenda packet



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## **Vina Groundwater Sustainability Agency (GSA) Stakeholder Advisory Committee (SHAC) Meeting Minutes**

Date: Wednesday, April 22, 2026

Time: 9:00 AM -12:00 PM

Location: Chico City Council Chamber, Conference Room #1, 421 Main Street, Chico, CA.

### **MEETING MINUTES**

April 22, 2026

1. **Call to Order and Roll Call** - the meeting was called to order at 9:03 AM

**SHAC Committee Members Present:** Greg Sohnrey, Anne Dawson, Holly Swan, Patrick Riley, Evan Markey, Todd Greene (arrived late), Susan Schrader (arrived late)

**SHAC Committee Members Absent:** Joanne Parsley and Samantha Lewis

**RCRD Representative Present:** Hal Crain (arrived late)

**Staff Present:** Dillon McGregor, GSA Program Manager; Becky Fairbanks, SGM Grant Project Manager; Kamie Loeser, Director of Butte County Water Resource & Conservation; Christina Buck, Assistant Director of Butte County Water Resource & Conservation; Brandon Mortimer, City of Chico

2. **Business from the Floor**

The public and Stakeholder Advisory Committee (SHAC) members had an opportunity to comment on items not on the agenda and that were relevant to the SHAC. Committee members and Management Committee staff are not required to respond to any issues raised during the public comment period. Commenters are asked to respect differing perspectives and to keep remarks within three minutes.

3. **\*Review and Approval of 3/25/2026 SHAC Meeting Minutes**

**Public Comment(s):** None

**Motion:** Anne Dawson made a motion to approve the 3/25/26 meeting minutes. That motion was seconded by Evan Markey.

**The motion passed as follows:**

**AYES:** Greg Sohnrey, Anne Dawson, Holly Swan, Patrick Riley, and Evan Markey

**ABSENT:** Todd Greene, Susan Schrader, Joanne Parsley and Samantha Lewis

4. **Update on the Status and Anticipated Timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation**

Staff provided an update on the anticipated topics and timelines over the next several months related to the Periodic Evaluation. **(Verbal Report – Christina Buck, Asst. Director Butte County Water and Resource Conservation)**

**Public Comment:** None

**Action:** Accepted as information.

**5. Review of Sustainable Groundwater Management (SGM) Grant-Funded Projects - Status and Next Steps**

Staff provided an overview of the status of each SGM grant-funded project and the process for public to submit comments on any of the reports produced by the grant-funded work. **(Verbal Report – Christina Buck, Asst. Director Butte County Water and Resource Conservation and Becky Fairbanks, GSA Project Manager)**

**Public Comment(s):** None

**Action:** Accepted as information.

**6. \*Consideration of a Well Mitigation Program in the Vina Subbasin**

Presentation and discussion of options, considerations, and SHAC input to inform the Vina GSA's approach and timing for a Well Mitigation Program, including whether to describe an active program or a trigger-based standby framework as part of the Periodic Evaluation. **(Report – Christina Buck, Asst. Director Butte County Water and Resource Conservation)**

**Public Comment(s):**

- Greg Brislain
- Ted Sandrawski
- Claudia Rawlins
- Tovey Giezentanner
- Cheetah Tchudi

**Motion:** Todd Greene made a motion recommending the Periodic Evaluation describe the following regarding the Domestic Well Mitigation management action: during the next implementation period, the GSA will develop a Well Mitigation Program that fits the needs of the subbasin. The motion was seconded by Anne Dawson.

**The motion passed as follows:**

**AYES:** Greg Sohnrey, Anne Dawson, Susan Schrader, Holly Swan, Patrick Riley, Todd Greene and Evan Markey

**ABSENT:** Joanne Parsley and Samantha Lewis

**A second recommendation was made, as follows:**

**Motion:** Evan Markey made a motion to recommend that the GSA Board dedicate funding in the FY 2026–27 Annual Budget to initiate the development of a Well Mitigation Program in early 2027. The motion was seconded by Todd Greene.

**The motion passed as follows:**

**AYES:** Greg Sohnrey, Anne Dawson, Susan Schrader, Holly Swan, Patrick Riley, Todd Greene and Evan Markey

**ABSENT:** Joanne Parsley and Samantha Lewis

7. **GSA Program Manager Update** (*Verbal Report – Dillon McGregor, GSA Program Manager*)

The program manager provided an update on the following topics:

1. Proposed FY26-27 Budget and fees coming to Board in May
2. RFP for Vina GSA Ongoing SGMA Implementation Support Services
3. Board Alternate for the Non-Agricultural Domestic Well Stakeholder Representative Vacancy

8. **SHAC Future Agenda Requests** – SHAC members may verbally request an item to be agendaized at a future meeting. After stating what the item would be, a majority vote of the SHAC is needed in order for the Management Committee to agendaize the item. SHAC members may also submit requests in writing to the GSA Program Manager to bring forward to the SHAC for consideration on a future agenda.

**No requests were made.**

9. **ADJOURNMENT:**

The Committee adjourned at 10:45 AM to their next meeting, **Wednesday, May 27, 2026.**



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## MEMORANDUM

**To:** Vina Stakeholder Advisory Committee

**From:** Christina Buck, Asst. Director Butte County Dept. Water and Resource Conservation  
(providing technical staff support to the GSA)

**Date:** May 20, 2026

**Subject: Consideration of Plan amendments to the Land Subsidence Sustainable Management Criteria in response to Department of Water Resources' Recommended Corrective Actions**

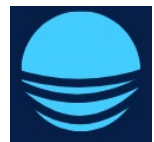
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### Background

The Vina Groundwater Sustainability Plan (GSP) was adopted in December 2021 by the Vina Groundwater Sustainability Agency (GSA) and Rock Creek Reclamation District GSA and subsequently reviewed and approved by the California Department of Water Resources (DWR) in July 2023. As part of its review, DWR provided Recommended Corrective Actions (RCAs) in its [Determination Letter](#) identifying several areas for improvement with an expectation that the RCAs should be considered by the GSAs in the first periodic evaluation of the GSP or addressed through amendments to the GSP. The Sustainable Groundwater Management Act (SGMA) requires the GSAs to submit the first Periodic Evaluation (PE) by January 2027. The PE is the GSA's written assessment of its GSP implementation. The Vina GSA received funding through the Sustainable Groundwater Management Round 2 grant program to support work to address data gaps identified in the plan and complete the Periodic Evaluation. Larry Walker Associates (LWA) was competitively selected to complete this work. In addition, Butte County staff provide technical staff support to the Vina GSA due to their local expertise and institutional knowledge. Documents and resources related to development of the Periodic Evaluation can be found online: <https://www.vinagsa.org/gsp-periodic-evaluation>.

### Approach to Addressing Land Subsidence

This memo provides relevant context and information to support the Stakeholder Advisory Committee (SHAC) in making a recommendation to the Vina GSA Board regarding how the GSA will address DWR's RCA related to land subsidence (one of six sustainability indicators). The GSA released a [strawman proposal](#) on April 27, 2026 to facilitate discussion and receive public input on whether the SMC for Land Subsidence should be amended in the GSP in response to DWR's RCA. As a result of public input, the strawman has been revised and proposed amendments are provided for SHAC's consideration, Attachment A.



## Development of Proposed Amendments

Staff met with the Rock Creek Reclamation District Board at their Special Meeting on May 4, 2026 and discussed the strawman proposal and received feedback on several aspects. The GSA held a hybrid public discussion at the Chico Library on May 7, 2026 to hear feedback and shape changes to the strawman. A handful of public members attended online and in-person for a productive discussion with staff and there appeared to be general agreement on several changes including:

- Clarification of the measurement uncertainty (change to 0.10 feet per year)
- Adding causation language to Minimum Threshold and Undesirable Result, meaning that land subsidence is an undesirable result when associated with declining groundwater levels
- Simplifying the Minimum Threshold and Undesirable result definitions to only have a cumulative 5 year trigger and not an annual rate. This approach is consistent with other neighboring Sacramento Valley subbasins that do not have observed subsidence and have approved GSPs. This also helps to avoid triggering the threshold due to noise in the measurement InSAR data or due to elastic (i.e. temporary) subsidence.
- The group discussed the monitoring network approach, use of InSAR, and importance of having geographic coverage throughout the subbasin to measure conditions in relation to critical infrastructure (highway 99, highway 32, wells located throughout the subbasin)
- The group also agreed pairing the satellite based InSAR data, that provides estimates of changes in land surface elevation, with monitoring well data providing information on changing groundwater conditions was important for linking the impact to groundwater management.

In addition, staff received written comments from the Agricultural Groundwater Users of Butte County (Attachment B). Staff took all comments and discussions into consideration and revised the strawman accordingly and prepared proposed draft language consistent with sections in the adopted 2022 GSP that could be used to amend the GSP (Attachment A).

## Relevant Context

The following provides important relevant context regarding potential changes to the Land Subsidence SMC in the GSP.

### No Observed Land Subsidence in Vina Subbasin

Under the Sustainable Groundwater Management Act (SGMA), land subsidence is one of six sustainability indicators that is required to be managed in the GSP to avoid "undesirable results," which is defined as significant and unreasonable land sinking caused by excessive groundwater pumping. The 2025 Water Year Annual Report (and previous annual reports) show that no inelastic land subsidence has been recorded in the Vina Subbasin. The 2025 Annual Report's Figure 5-2 (included below for quick reference) shows "no significant change" of vertical displacement over a 5-year period. The entire Annual Report is available [online](#).

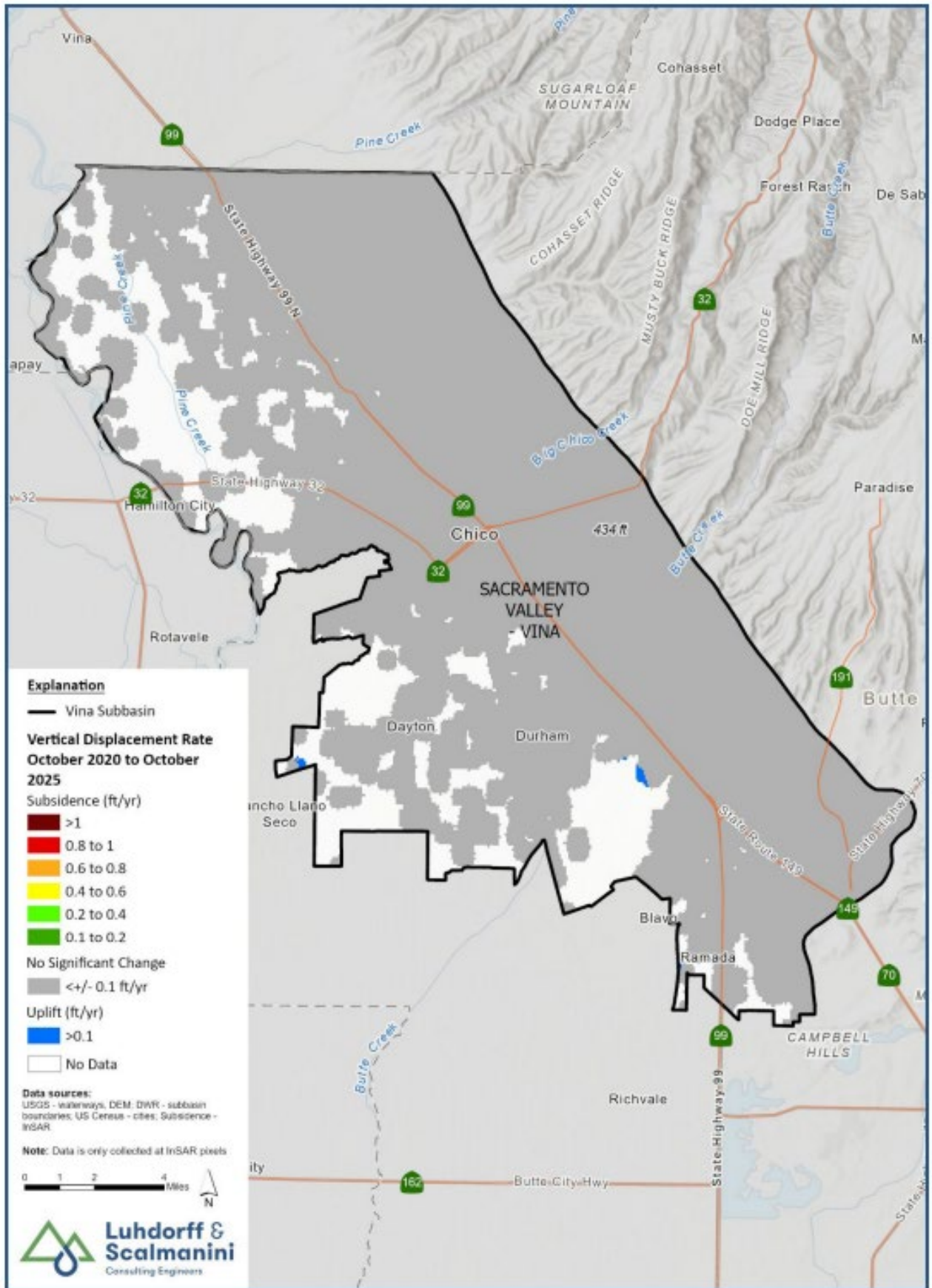


Figure 5-2. Vina Subbasin Vertical Displacement in Ground Surface from 10/2020 to 10/2025

## DWR Recommended Corrective Actions

DWR provided recommended corrective actions (RCAs) in its GSP Determination Letter identifying several areas for improvement with respect to the land subsidence sustainability indicator. It is DWR's expectation that RCAs should be considered by the GSAs in the first periodic evaluation of the GSP (due to be submitted in January 2027). Provided below is Recommended Corrective Action 5, as stated in the Determination Letter:

*Provide additional information on criteria used to identify undesirable results, and sustainable management criteria for land subsidence, including:*

- a. Provide a clear, quantitative definition of when undesirable results for land subsidence may occur in the Subbasin, as required by the GSP regulations, to support the selection of land subsidence minimum thresholds that demonstrate avoidance of undesirable results.*
- b. Establish sustainable management criteria for land subsidence for the Subbasin utilizing a monitoring network that directly measures land elevation change such as remote sensing data, survey monuments, or global positioning system stations.*

## Current Approach in the 2022 GSP

The [Vina Subbasin Groundwater Sustainability Plan \(2022\)](#) currently uses groundwater levels as a proxy, using the groundwater level SMC and monitoring network for land subsidence as well. This needs to be addressed since it relies entirely on observed groundwater level conditions and not a direct measurement of land surface changes (as requested in DWR's RCA 5b, above).

## Recently Released DWR Best Management Practices (BMP) on Land Subsidence

In January 2026, DWR released its Best Management Practices ([BMP on Land Subsidence](#)). This document provides guidance to Groundwater Sustainability Agencies on how to monitor, evaluate, and establish Sustainable Management Criteria for land subsidence in a manner that identifies and avoids significant and unreasonable impacts to infrastructure and land use. It describes four different land subsidence management scenarios and suggests different approaches depending on the conditions in the subbasin. The Vina Subbasin falls into **Scenario 2**, which describes conditions where little or no subsidence has been observed to date, but groundwater levels may be allowed to decline below historical lows (based on how Groundwater Levels Minimum Thresholds are set), creating a risk of inelastic subsidence and requiring monitoring and SMC that identify conditions that could lead to significant and unreasonable impacts. Land Subsidence is a sustainability indicator DWR has provided clear guidance on, in addition to the RCAs.

## Neighboring Subbasins

Additionally, the approaches neighboring subbasins have taken regarding land subsidence monitoring and SMC is informative to the Vina Subbasin. This is summarized in Table 5 of the ['Joint GSP Evaluation for the North Sacramento River Corridor'](#) Tech Memo, and is included below for easy reference.

## Requested Action

Attached to this memo is potential draft language for amendments to the Vina GSP for sections related to Land Subsidence SMC and monitoring. The SHAC is asked to consider the draft amendment language and make a recommendation to the Vina GSA Board regarding 1. the content itself, and 2. the proposed approach to amend the GSP to address DWR's recommended corrective actions related to land subsidence.

## Attachments

- A. Land Subsidence – Proposed Amended GSP Sections
- B. Comments from Agricultural Groundwater Users of Butte County

Table 5. Summary of Land Subsidence SMC

Subbasin	Approved GSP Section Reference	MT	Undesirable Results (UR)	MO	InSAR Network?	Five-Year IM (2027)	Current Conditions*
<b>Vina**</b>	Section 3.7. p. 194-195	GWL MT Used as Proxy	GWL UR Used as Proxy	GWL MO Used as Proxy	Used as Supplement	GWL IM Used as Proxy	On track to meet IM (Section 5.2.3. p. 38)
<b>Butte**</b>	Section 4.3.5. p. 225-226	0.5 foot over a five-year period	25% of monitoring locations fall below MT	0.25 foot over five-year period	Used as Supplement	No IM identified	No indication of UR (Section 5.2. p. 41)
<b>Red Bluff</b>	Section 3.2.3. p. 312-314	0.5 foot over a five-year period	0.5 foot over a five-year period – result of declining GWL	one foot over 20 years	Yes – eight pixels collocated near WL RMS	-0.25 feet	No indication of UR (Section 5.2. p. 35)
<b>Los Molinos</b>	Section 3.2.3. p. 306	0.5 foot over a five-year period	0.5 foot over a five-year period – result of declining GWL	one foot over 20 years	Yes – nine pixels collocated near WL RMS	-0.25 feet	No indication of UR (Section 5.2. p. 37)
<b>Corning</b>	Section 6.9. p. 483-491	0.5 foot over a five-year period	0.5 foot over a five-year period – result of declining GWL	0 ft/yr	Yes	< 0.1 ft/yr	No Indication of UR (Section 5.2. p. 37)
<b>Colusa</b> (only subbasin with current measurable subsidence)	Section 5.4.5. p. 388-393	Cumulative subsidence of two feet (from Jan. 2024) in 1 PLSS section***, or >0.1 ft/yr across 10 contiguous PLSS sections for two consecutive years	Cumulative subsidence of >two feet (from Jan. 2024) in one PLSS, or >0.1 ft/yr across 10 contiguous PLSS sections for two years	0 ft/yr	Yes	0.3 ft/yr	No indication of UR – Measured subsidence (>0.1 feet) occurred in three locations, but were not contiguous PLSS (Section 6.1.4. p. 47-50)

ft/yr = feet per year

\*Current Conditions as described in WY 2024 Annual Report. Note that the sections indicated referencing relevant section in the most recent, 2024, Annual Report, which was made public in early spring 2025.

\*\*Vina and Butte Subbasins have an RCA to revise their monitoring network to include InSAR data

\*\*\*PLSS section: Defined as one square mile, or 640 acres

# Land Subsidence - Proposed Amended GSP Sections

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The following is proposed for consideration as a Plan amendment to respond to the Department of Water Resources' Recommended Corrective Actions related to the Land Subsidence sustainability indicator. The following sections of the GSP would be amended with the content below replacing Sections 3.7, 4.5 and (new) 4.9.3. This is written as direct language to be used to amend the GSP.

## Proposed Amendments to Specified Sections of the 2022 GSP:

### 3.7 Land Subsidence Sustainable Management Criteria

Land subsidence in the Subbasin is evaluated using direct measurements of land surface deformation, primarily through Interferometric Synthetic Aperture Radar (InSAR) data, supplemented by available Global Positioning System (GPS) measurements where applicable. These datasets provide spatially distributed estimates of vertical land surface change and are used to assess both the rate and cumulative magnitude of subsidence across the Subbasin.

Consistent with the Department of Water Resources (DWR) Land Subsidence Best Management Practice (BMP), the Subbasin is characterized as having no documented history of significant inelastic land subsidence, but recognizes that subsidence may occur if groundwater elevations decline sufficiently to induce compaction of fine-grained sediments. Accordingly, the Sustainable Management Criteria (SMC) are designed to identify conditions under which subsidence could result in significant and unreasonable impacts to beneficial uses and users, including infrastructure and land use. The locally defined undesirable result, MT, and MO are discussed in the next sections.

**Measurement Uncertainty.** Subsidence rates less than 0.10 feet per year are considered within the range of InSAR measurement uncertainty and are not interpreted as indicative of inelastic land subsidence.

#### 3.7.1 Undesirable Result

An undesirable result due to land subsidence is experienced if:

*Subsidence exceeding the Minimum Threshold results in significant and unreasonable impacts to beneficial uses and users, including infrastructure, namely highways, roads, drainage, irrigation, or railroad infrastructure, power transmission lines, or well casings. An*

*undesirable result due to subsidence occurs as a result of declining groundwater levels. Groundwater levels are evaluated alongside InSAR data to assess risk of inelastic compaction and inform management actions.*

*This occurs when:*

*1. The Minimum Threshold is exceeded at the same representative monitoring location for two consecutive years with confirmed associated impacts to infrastructure and declining groundwater levels.*

### **3.7.2 Minimum Threshold (MT)**

The minimum threshold for land subsidence is defined as:

*0.5 foot cumulative subsidence over a 5-year period at the same location as a result of declining groundwater levels.*

### **3.7.3 Measurable Objective (MO)**

The measurable objective for land subsidence is defined as:

*0.0 feet per year of land subsidence at representative monitoring locations, recognizing that minor variation within measurement uncertainty does not indicate inelastic subsidence.*

Since no subsidence has occurred in the subbasin, no interim milestone is needed.

## **4.5 Land Subsidence (Monitoring Network)**

### **4.5.1 Background**

The broad monitoring network for land subsidence includes all available InSAR data and one available GPS monitoring site available within the Vina Subbasin. These datasets will be used for analysis and basin setting understanding.

Therefore, the land subsidence monitoring network consists of:

- DWR-provided InSAR data, evaluated from data pixels distributed throughout the Subbasin;
- Available GPS monument (chco station) used to corroborate InSAR-derived displacement estimates (one site in Vina);

### **4.5.2 Location and Density of Monitoring Sites and Frequency of Measurement**

To support evaluation of land subsidence, the Vina Subbasin utilizes InSAR-derived land surface deformation data across the full Subbasin extent. All available InSAR data are reviewed annually in relation to groundwater level changes to evaluate spatial patterns, identify potential areas of deformation, and assess overall subsidence conditions. InSAR data are evaluated with consideration of both annual rates and cumulative deformation

trends. SMC compliance is based on a rolling 5-year cumulative change, while annual rates are used as supporting information.

**Measurement Uncertainty.** Subsidence rates less than 0.1 feet per year are considered within the range of InSAR measurement uncertainty and are not interpreted as indicative of inelastic land subsidence.

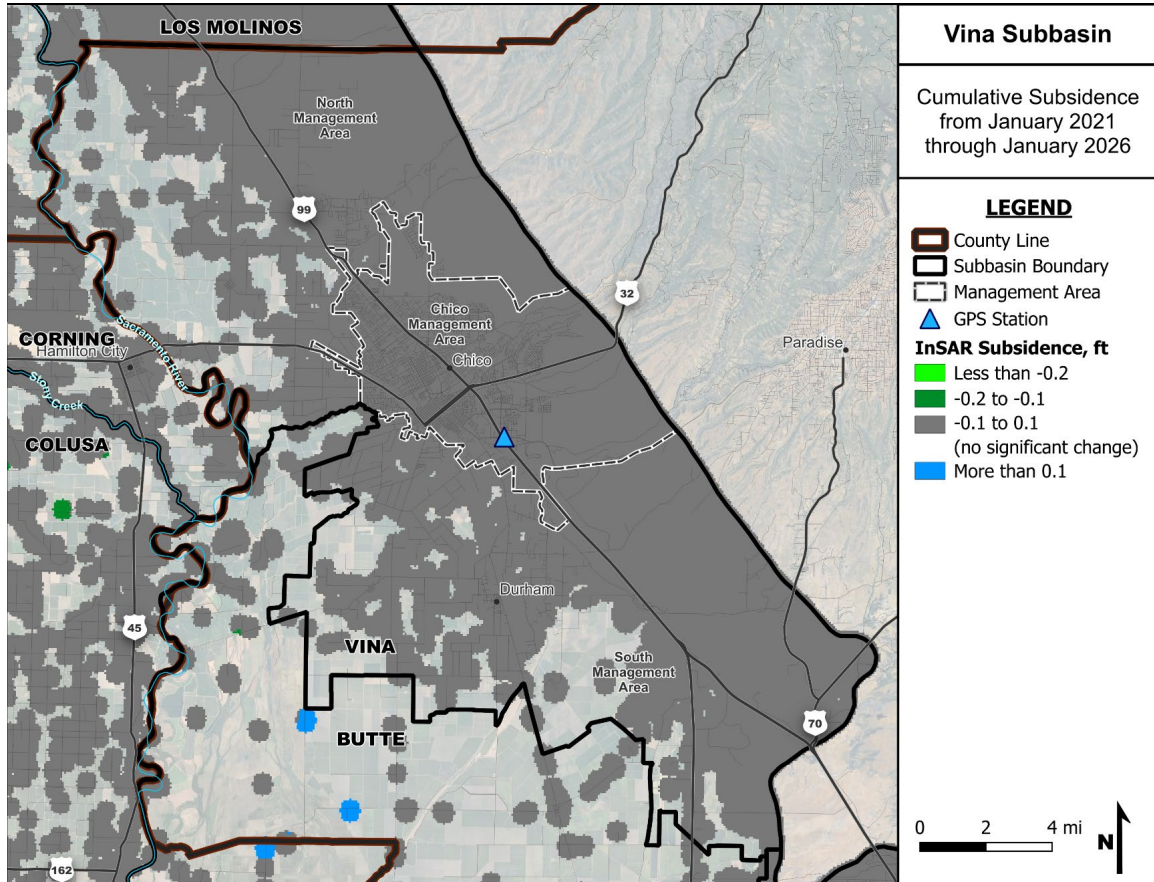


Figure 1. Broad Monitoring Network for Land Subsidence consisting of InSAR and GPS Station Data

#### 4.9.3 Land Subsidence [Representative Monitoring Site (RMS) for Sustainability Indicators]

For purposes of Sustainable Management Criteria (SMC) evaluation and long-term tracking, a subset of representative monitoring locations is designated from the full InSAR dataset. These representative locations are not intended to replace the full dataset, but rather to provide a consistent, stable, and interpretable set of monitoring points for evaluating compliance with SMC over time. Therefore, the sustainability indicator for land subsidence is evaluated by monitoring land surface elevation at select InSAR data pixels near groundwater level monitoring wells and other critical infrastructure. Specifically, each representative monitoring well location consists of one central InSAR pixel and eight adjacent supporting pixels monitored for vertical displacement. Selecting pixels near the

groundwater monitoring wells allows the GSAs to study the impact of falling and rising water levels on subsidence in the same location and develop a relationship between water levels and subsidence over time. The pixels and rationale for selection are presented in Table 1 (below).

Representative monitoring locations are defined using the following criteria and considerations:

- **Data Quality and Reliability**  
Selected locations are based on InSAR pixels exhibiting consistently high data quality, including stable coherence and minimal evidence of processing artifacts or anomalous variability over the available time series.
- **Proximity to Critical Infrastructure**  
Representative locations include areas near infrastructure that could be sensitive to land subsidence, such as roads, pipelines, and flood conveyance features, to ensure that monitoring captures conditions relevant to beneficial uses and users. This includes highway 99, highway 32, irrigation and drainage infrastructure, locations throughout the City of Chico and Cal Water Service area, and the community of Durham.
- **Integration with Groundwater Monitoring**  
Where feasible, representative InSAR locations are selected near existing groundwater level monitoring wells to support evaluation of the relationship between groundwater elevations and land surface deformation.
- **Spatial Representation of the Subbasin**  
Monitoring locations are distributed across the Subbasin, including each management area, to capture spatial variability in groundwater conditions and potential subsidence response.

A representative monitoring location consists of a central InSAR pixel supported by a group of eight adjacent pixels, allowing for confirmation that observed deformation patterns are spatially consistent and not attributable to localized data artifacts. For SMC compliance, the representative monitoring location will be evaluated using the average vertical displacement of the nine-pixel cluster.

The number and distribution of representative monitoring locations are periodically reviewed and may be refined over time as additional data become available or as understanding of subsidence conditions evolves. However, changes to representative locations will be made in a manner that maintains continuity in long-term trend evaluation.

This approach is consistent with DWR's monitoring and land subsidence BMP guidance, which emphasizes the use of spatially distributed data to assess basin-wide conditions, while also identifying representative monitoring locations sufficient to detect conditions that could lead to significant and unreasonable impacts.

The RMS network includes 44 representative monitoring locations, each consisting of a groundwater monitoring well and associated nine-pixel InSAR cluster.

**Table 1. Land Subsidence RMS Monitoring Network site locations. All sites are groundwater monitoring wells and associated InSAR pixels (cluster of 9 at each well site)**

Site ID	Site Type <sup>1</sup>	Latitude	Longitude	Selection Criteria
<b>Vina - North Management Area</b>				
07H001M	Well/InSAR pixels	39.86482	-121.9049	GW Monitoring Site
29P002M	Well/InSAR pixels	39.81332	-121.8913	GW Monitoring Site
33A001M	Well/InSAR pixels	39.80970	-121.8631	GW Monitoring Site
03H002M	Well/InSAR pixels	39.87822	-121.9571	GW Monitoring Site
09E001M	Well/InSAR pixels	39.86510	-121.9930	GW Monitoring Site
10E001M	Well/InSAR pixels	39.86400	-121.9724	GW Monitoring Site
14R002M	Well/InSAR pixels	39.84105	-121.9399	Critical Infrastructure & GW Monitoring Site
27L001M	Well/InSAR pixels	39.81800	-121.9669	GW Monitoring Site
28M002M	Well/InSAR pixels	39.81877	-121.9912	GW Monitoring Site
36P001M	Well/InSAR pixels	39.79720	-121.9297	GW Monitoring Site
TNC Well	Well/InSAR pixels	39.72548	-121.9449	GW Monitoring Site
<b>Vina - Chico Management Area</b>				
09B001M	Well/InSAR pixels	39.78180	-121.8718	GW Monitoring Site
20K001M	Well/InSAR pixels	39.74450	-121.8905	Critical Infrastructure & GW Monitoring Site
PWSCH1b	Well/InSAR pixels	---- <sup>2</sup>	----	Critical Infrastructure & GW Monitoring Site
PWSCH02	Well/InSAR pixels	----	----	Critical Infrastructure & GW Monitoring Site
PWSCH03	Well/InSAR pixels	----	----	Critical Infrastructure & GW Monitoring Site
PWSCH07	Well/InSAR pixels	----	----	Critical Infrastructure & GW Monitoring Site
18J001M	Well/InSAR pixels	39.76190	-121.7891	GW Monitoring Site
30C002M	Well/InSAR pixels	39.73827	-121.7982	Critical Infrastructure & GW Monitoring Site
CMW-102A	Well/InSAR pixels	39.73537	-121.8379	GW Monitoring Site
DMW-3	Well/InSAR pixels	39.75980	-121.8752	GW Monitoring Site
GW-4	Well/InSAR pixels	39.79651	-121.8483	GW Monitoring Site
<b>Vina - South Management Area</b>				
02H003M	Well/InSAR pixels	39.61576	-121.8222	GW Monitoring Site
06Q001M	Well/InSAR pixels	39.61270	-121.7883	GW Monitoring Site
31M001M	Well/InSAR pixels	39.54460	-121.6873	Critical Infrastructure & GW Monitoring Site
33L001M	Well/InSAR pixels	39.54357	-121.6467	GW Monitoring Site
10B003M	Well/InSAR pixels	39.69630	-121.8486	GW Monitoring Site

Site ID	Site Type <sup>1</sup>	Latitude	Longitude	Selection Criteria
12D001M	Well/InSAR pixels	39.69322	-121.8231	GW Monitoring Site
12K001M	Well/InSAR pixels	39.68920	-121.8121	GW Monitoring Site
13L002M	Well/InSAR pixels	39.67348	-121.8144	GW Monitoring Site
14Q002M	Well/InSAR pixels	39.66910	-121.8298	GW Monitoring Site
25K001M	Well/InSAR pixels	39.64200	-121.8128	GW Monitoring Site
26K001M	Well/InSAR pixels	39.64540	-121.8313	GW Monitoring Site
27B001M	Well/InSAR pixels	39.65280	-121.8526	GW Monitoring Site
27D001M	Well/InSAR pixels	39.65110	-121.8607	GW Monitoring Site
28F001M	Well/InSAR pixels	39.64900	-121.8726	GW Monitoring Site
18C001M	Well/InSAR pixels	39.68200	-121.7970	GW Monitoring Site
20P001M	Well/InSAR pixels	39.65680	-121.7818	GW Monitoring Site
26E003M	Well/InSAR pixels	39.64680	-121.7263	Critical Infrastructure & GW Monitoring Site
30L001M	Well/InSAR pixels	39.64220	-121.7994	GW Monitoring Site
32E001M	Well/InSAR pixels	39.63383	-121.7845	GW Monitoring Site
29J003M	Well/InSAR pixels	39.64540	-121.6588	GW Monitoring Site
32B001M	Well/InSAR pixels	39.63958	-121.6634	GW Monitoring Site
MW-6	Well/InSAR pixels	39.67358	-121.7335	GW Monitoring Site

1. "Well" site types are wells included in the broad groundwater level monitoring network.
2. Public Water Supply (PWS) locations not published due to confidentiality considerations
3. Identified as Critical Infrastructure site in this table if located within ½ mile of Hwy 99 and Hwy 32

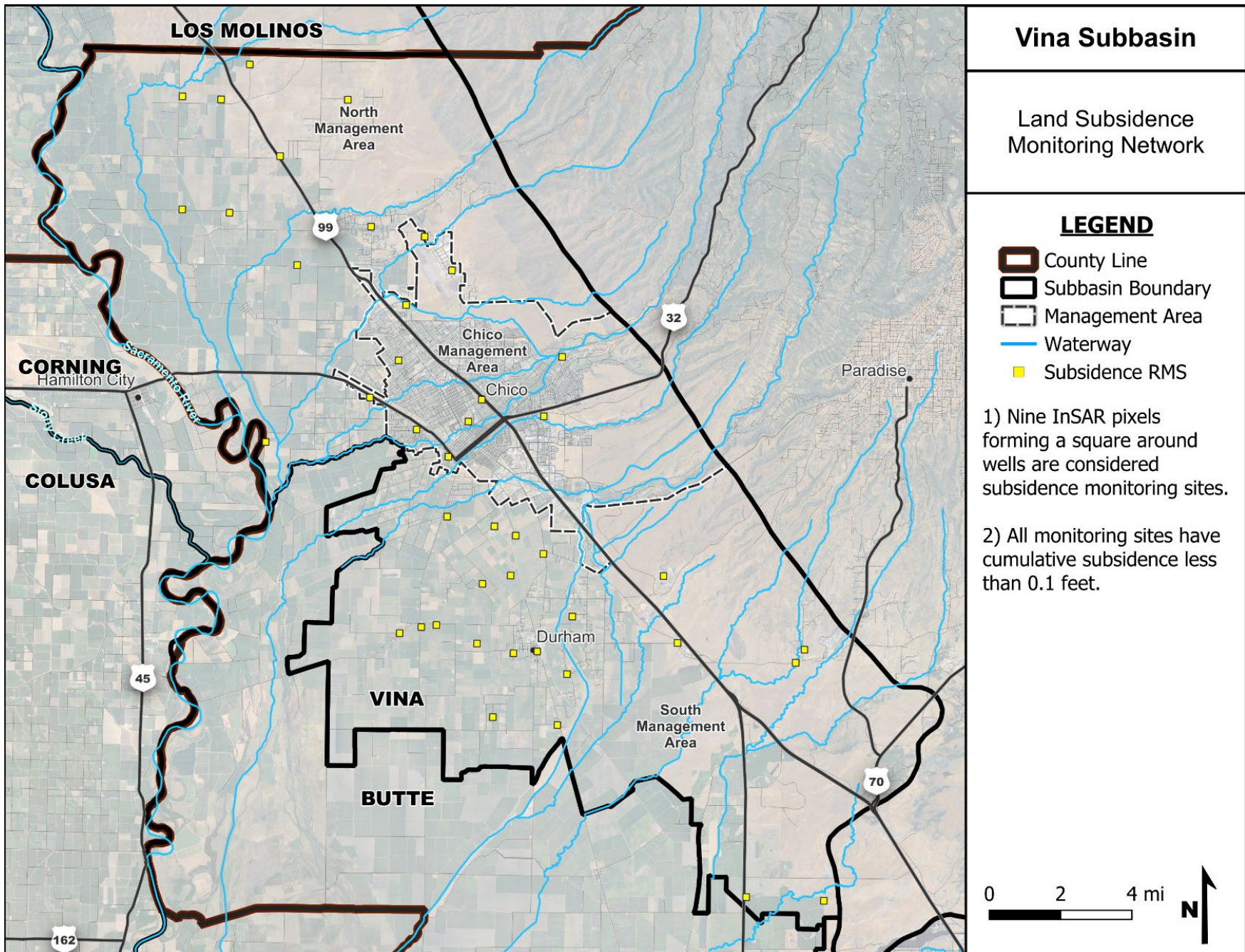


Figure 2. Land Subsidence Representative Monitoring Site (RMS) network

# Attachment B

## Proposed Edits and Retained Provisions — Vina GSA Subsidence Strawman Proposal

Prepared for the Tuscan Water District Board, Special Meeting — May 14, 2026

On April 24, 2026, Vina GSA staff and consultants released a strawman proposal for the land subsidence Sustainable Management Criteria (SMC), responding to DWR Recommended Corrective Action 5 in advance of the January 2027 Periodic Evaluation. The strawman correctly establishes an InSAR-driven monitoring framework as RCA 5(b) directs. The table below sets out the Agricultural Groundwater Users of Butte County (AGUBC) landowner position section by section: rows 1–9 are proposed edits where the strawman's discretionary choices diverge from the DWR Land Subsidence BMP, the four DWR-approved Sacramento Valley comparator GSPs (Red Bluff, Los Molinos, Corning, Colusa — all approved February 2025), or the same engineering team's 2027 Periodic Evaluation draft for the neighboring Wyandotte Creek Subbasin. Rows 10–13 are strawman provisions that are accepted as written.

### Landowner Position — Section by Section

#	Section / Topic	Strawman as Drafted	Landowner Position	Why
1	<b>Minimum Threshold (MT)</b>	0.2 ft/yr at any RMS, OR 0.5 ft / 5-yr cumulative (stacked triggers)	<b>PROPOSED EDIT</b> — 0.5 ft / 5-yr cumulative only, attributable to declining groundwater levels.	No DWR-approved Sacramento Valley basin uses a single-pixel annual-rate MT. Matches Red Bluff, Los Molinos, Corning, Butte, and the same engineer's Wyandotte Creek draft.
2	<b>Undesirable Result — Trigger 2</b>	>0.1 ft/yr across 10 contiguous PLSS sections for 2 consecutive years (Colusa-style)	<b>PROPOSED EDIT</b> — Removed.	Colusa adopted this structure for a basin with measured subsidence; Vina has none. Untethers the UR from the land-use-harm requirement of 23 CCR § 354.28(c)(5)(A).
3	<b>Undesirable Result — Trigger 1</b>	MT exceedance (annual-rate) + confirmed infrastructure impact, 2 yrs	<b>PROPOSED EDIT</b> — MT exceedance (cumulative) + confirmed infrastructure impact + groundwater-level causation finding, 2 yrs.	Updates the MT reference to the cumulative trigger and adds the Red Bluff / Los Molinos causation gate (“as a result of declining GWL”).
4	<b>Relationship to Groundwater Conditions</b>	Groundwater-level framework abandoned entirely	<b>PROPOSED EDIT</b> — Groundwater-level framework retained as leading indicator alongside InSAR; sequencing language added making subsidence-driven PMAs conditional on observed subsidence.	BMP § 6.8 endorses the GWL framework in basins without observed subsidence; BMP § 7.4.2 sequences Scenario 2 PMAs after detection. Parallels the Wyandotte Creek 2027 Periodic Evaluation draft.
5	<b>Interim Milestones (IM)</b>	“0.0 ft/yr maintained” (duplicate of MO)	<b>PROPOSED EDIT</b> — No IM established. (or 0.0 ft/yr)	BMP § 6.5: “interim milestones is not necessary” in basins without observed subsidence and with MO at zero. Butte's “No IM identified” already DWR-accepted.
6	<b>Measurement Uncertainty</b>	“Approximately 0.05 to 0.10 ft/yr” range	<b>PROPOSED EDIT</b> — “< 0.10 ft/yr” (single value).	Eliminates interpretive disputes near the boundary. Anchored to BMP § 6.3 (“zero or the measurement error of the monitoring equipment”).
7	<b>Sustainability Indicator Description</b>	Geologic-substrate finding omitted; conditional risk pathway only	<b>PROPOSED EDIT</b> — Geologic-substrate finding restored, with SVSim specific-yield (Sy ≈ 0.085) quantitative support and the four-year (WY 2022–25) empirical record of no inelastic subsidence.	DWR's 2023 Staff Report accepted “subsurface materials... not susceptible to subsidence.” Strongest empirical anchor for the Subbasin's Scenario 2 posture.

8	<b>Monitoring Network — Spatial Criteria</b>	“Areas of groundwater extraction (west of Highway 99)” leads	<b>PROPOSED EDIT</b> — Critical infrastructure leads; mechanism-based criteria (lithology, GWL decline) follow; Management Area coverage added.	23 CCR § 354.28(c)(5)(A) ties subsidence MTs to identified land uses and property interests, not to pumping geography.
9	<b>Monitoring Network — Infrastructure List</b>	Highway 99, Highway 32, City of Chico, Durham	<b>PROPOSED EDIT</b> — Adds irrigation district infrastructure, Cal Water service area, and consultation with infrastructure operators.	BMP § 5.2 calls for GSAs to “broadly encompass any infrastructure, land use, and property interest.”
10	<b>Measurable Objective (MO)</b>	0.0 ft/yr of land subsidence at representative monitoring locations	<b>RETAIN AS WRITTEN</b> — 0.0 ft/yr accepted.	BMP-consistent. § 6.4: “In basins that have not experienced land subsidence, the measurable objective should be set at zero.”
11	<b>InSAR + GPS Monitoring Backbone</b>	DWR-provided InSAR data, plus one available GPS site in the Vina Subbasin, as the monitoring backbone	<b>RETAIN AS WRITTEN</b> — InSAR + 1 GPS site accepted as the monitoring backbone.	RCA 5(b) is disjunctive (“remote sensing data, survey monuments, or GPS stations”); 23 CCR § 354.34(c)(6) is disjunctive. DWR has approved InSAR-driven networks in Red Bluff (8 pixels), Los Molinos (9 pixels), Corning, and Colusa. No record exists of DWR rejecting an InSAR-only network in any California basin.
12	<b>Annual InSAR Review Framework</b>	InSAR data evaluated at least annually, with consideration of both annual rates and cumulative deformation trends	<b>RETAIN AS WRITTEN</b> — Annual review with annual-and-cumulative trend evaluation accepted.	Consistent with BMP § 6.1.2's review-cycle framework. The annual review structure is correct; only the MT it is evaluated against is changing per Edit 1.
13	<b>Periodic Refinement of Monitoring Locations</b>	Number and distribution of representative monitoring locations periodically reviewed and refined over time, with long-term trend-evaluation continuity preserved	<b>RETAIN AS WRITTEN</b> — Periodic refinement framework accepted.	Consistent with BMP § 6.1's periodic-evaluation framework. Preserves continuity of trend evaluation across future GSP cycles.

**Defensibility.** Taken together, this position fully satisfies DWR Recommended Corrective Action 5: a quantitative undesirable-result definition tied to identified infrastructure and to declining groundwater levels, and a monitoring network that directly measures land elevation change via InSAR. Every provision is anchored in the DWR Land Subsidence BMP, in 23 CCR §§ 354.28(c)(5) and 354.34(c)(6), or in a DWR-approved Sacramento Valley comparator GSP. Full redline, edit-by-edit rationale, and supporting research are in the AGUBC May 3, 2026 Strawman Redline and Research Memo (v2).



**Vina Groundwater Sustainability Agency**  
**308 Nelson Avenue, Oroville, CA 95965**  
**(530) 552-3592 · VinaGSA@gmail.com**

## MEMORANDUM

**To:** All Stakeholders

**From:** Christina Buck, Assistant Director, Butte County Department of Water and Resource Conservation and Laura Foglia and Ryan Fulton, Larry Walker and Associates

**Date:** May 18, 2026

**Subject: Consideration of a Strawman Proposal: Approach to Addressing Interconnected Surface Water in the Periodic Evaluation in response to DWR Recommended Corrective Actions**

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### Background

The Vina Groundwater Sustainability Plan (GSP) was adopted in December 2021 by the Vina Groundwater Sustainability Agency (GSA) and Rock Creek Reclamation District GSA and subsequently reviewed and approved by the California Department of Water Resources (DWR) in July 2023. As part of its review, DWR provided recommended corrective actions (RCAs) in its Determination Letter identifying several areas for improvement with an expectation that the RCAs should be considered by the GSAs in the first periodic evaluation of the GSP or addressed through amendments to the GSP. The Sustainable Groundwater Management Act (SGMA) requires the GSAs to submit the first Periodic Evaluation (PE) by January 2027. The PE is the GSA's written assessment of its GSP implementation. The Vina GSA received funding through the Sustainable Groundwater Management Round 2 grant program to support work to address data gaps identified in the plan and complete the Periodic Evaluation. Larry Walker and Associates (LWA) was competitively selected to complete this work. Butte County staff provide technical staff support to the Vina GSA due to their local expertise and institutional knowledge.

### Purpose of this Memo

This memo is intended to inform stakeholders and solicit input on a preliminary approach for how the Vina and Rock Creek Reclamation District Groundwater Sustainability Agencies (GSAs) could address the Department of Water Resources' (DWR's) Recommended Corrective Actions related to depletion of interconnected surface water (ISW) in the Vina Subbasin. The proposal is framed as a strawman for further discussion, not as a final staff recommendation.

The proposed approach is to take a meaningful step forward in the 2027 Periodic Evaluation by documenting the new information now available, defining a broader ISW monitoring network focused on shallow groundwater and stream gages, and clarifying that the existing groundwater level Representative Monitoring Site (RMS) network should no longer be relied upon as the primary proxy for ISW. However, the approach would not yet establish ISW-specific sustainable management criteria (SMC), minimum thresholds (MTs), measurable objectives (MOs), or ISW RMS sites. Instead, those decisions would be deferred until: (1) additional monitoring data are collected, (2) DWR releases the ISW guidance referenced in its Recommended Corrective Action, and (3) ongoing regional coordination provides a more consistent framework for shared surface water systems. Again, this memo and strawman proposal are intended to support

discussion and solicit input regarding a potential path forward for consideration by the GSAs, recognizing the ultimate decision rests with the Boards.

## Relevant Documents and Resources

The following materials provide background for this discussion and should be considered together. Several documents are draft work products intended to support discussion of the Vina Subbasin Periodic Evaluation.

- [Draft Technical Memorandum: Vina Subbasin Interconnected Surface Water \(April 2026\)](#)
- [Groundwater Monitoring Network Enhancements Technical Memorandum \(November 2024\)](#)
- [AEM-Based Evaluation of Vina Monitoring Wells \(Greene, October 2024\)](#)
- [Joint GSP Evaluation – North Sacramento River Corridor TM \(Jan 2026\)](#)
- [North Sacramento River Corridor Inter-Basin Coordination / Meeting Materials](#)
- [DWR Vina Subbasin GSP Determination Letter and Staff Report \(July 27, 2023\)](#)
- [Vina Subbasin Groundwater Sustainability Plan \(2022\)](#)

## Relevant Context

### What Interconnected Surface Water Means Under SGMA

Under SGMA, depletion of interconnected surface water is one of the six sustainability indicators that must be considered in a GSP. DWR defines interconnected surface water as surface water that is hydrologically connected to the underlying aquifer by a continuous saturated zone and is not completely depleted. In practical terms, ISW refers to locations where groundwater and surface water systems directly influence one another.

Under SGMA, depletions of ISW are specifically related to depletions caused by groundwater use. Groundwater pumping may reduce groundwater inflow to a stream or river, or increase streamflow losses to groundwater, in a way that could affect beneficial uses of surface water. The key management challenge is distinguishing general stream-aquifer interaction from the portion of that interaction caused by groundwater pumping.

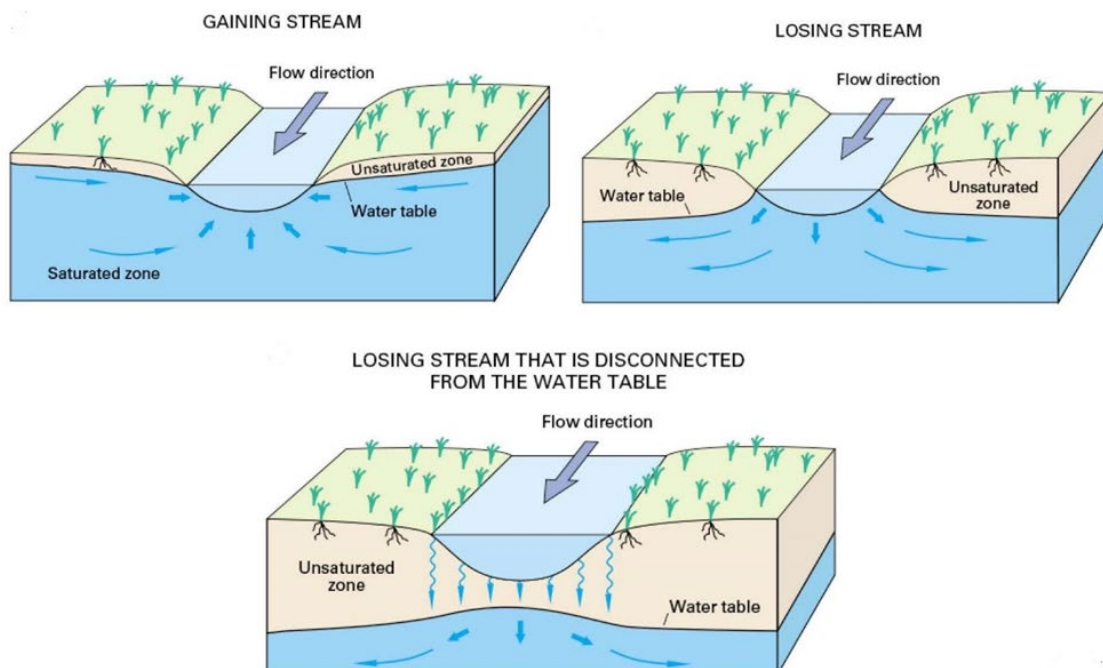


Figure 1. Conceptual illustration of gaining, losing, and disconnected stream conditions. Source: USGS

## Current 2022 GSP Approach

The 2022 Vina GSP acknowledged the need to better characterize and monitor ISW. Because shallow groundwater data were limited at the time of GSP development, the GSP did not establish SMC specific to ISW depletion. Instead, groundwater level SMC and the groundwater level RMS network were used as a proxy for ISW. The GSP also identified a need for additional wells and other monitoring to analyze the interaction of streams and groundwater pumping. The plan identified ISW monitoring as a data gap to be addressed during implementation.

The new information developed since GSP adoption as part of the SGM grant funded Data Gap project provides an opportunity to move beyond relying on the groundwater level RMS network as the primary proxy for ISW. At the same time, the available data is still relatively new and additional monitoring and a longer period of record is needed before the GSAs can confidently identify ISW RMS sites or establish durable ISW-specific SMC.

## DWR Recommended Corrective Actions Related to ISW

DWR approved the Vina Subbasin GSP in July 2023 and identified Recommended Corrective Actions to be considered as part of the first Periodic Evaluation.

Provided below is Recommended Corrective Action 6, as stated in the Determination Letter:

*Department staff understand that estimating the location, quantity, and timing of stream depletion due to ongoing, Subbasin-wide pumping is a complex task and that developing suitable tools may take additional time; however, it is critical for the Department's ongoing and future evaluations of whether GSP implementation is on track to achieve sustainable groundwater management. The Department plans to provide guidance on methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water and support for establishing specific sustainable management criteria in the near future. This guidance is intended to assist GSAs to sustainably manage depletions of interconnected surface water.*

*In addition, the GSAs should work to address the following items by the first periodic evaluation:*

- a. Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.*
- b. Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.*
- c. Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSAs' jurisdictional area.*
- d. Clarify the groundwater level monitoring sites that will be used for the evaluation of depletions of interconnected surface water and provide site-specific information.*

DWR has not yet released the ISW guidance referenced in its corrective action. This would be a key reason to proceed incrementally and avoid setting ISW-specific SMC before state guidance, regional coordination, and additional local monitoring data are available.

## New Information Available Since the 2022 GSP

Since adoption of the 2022 GSP, the GSAs and partner agencies have developed substantial new information to improve the characterization of ISW in the Vina Subbasin. The draft [ISW Technical Memorandum](#) by Larry Walker Associates and work done through the grant funded Data Gap project (see other previously linked relevant documents) identify the following major lines of new information:

1. **Shallow groundwater monitoring network identification and development.** Existing groundwater level monitoring wells have been evaluated and classified based on screen intervals, AEM information, and other well construction data to identify wells more representative of shallow water table conditions.
2. **Additional monitoring wells and stream gages.** SGM Implementation Grant Program funding supported design and installation of new monitoring wells and stream gages (currently being installed, spring 2026).
3. **Updated Butte Basin Groundwater Model (BBGM).** BBGM version 1.3 has been extended through Water Year 2024 and provides updated model-based estimates relevant to stream-aquifer interaction.
4. **AEM-based evaluation.** DWR's AEM data have been used to improve understanding of subsurface conditions and support classification of monitoring wells by aquifer zone.
5. **Isotope study.** Isotope data have been collected along Big Chico Creek and Butte Creek to help identify gaining and losing stream reaches.
6. **Topographic surveys and LiDAR comparisons.** Streambed and water surface elevation information has been used with shallow groundwater elevations to help assess stream-aquifer connectivity.

Together, these data provide an improved foundation for ISW characterization. They also highlight the complexity of the issue and the importance of continuing to collect shallow groundwater and surface water data before selecting compliance monitoring sites or setting ISW thresholds. The newly installed wells and stream gages will provide valuable information over the next 5-year implementation period.

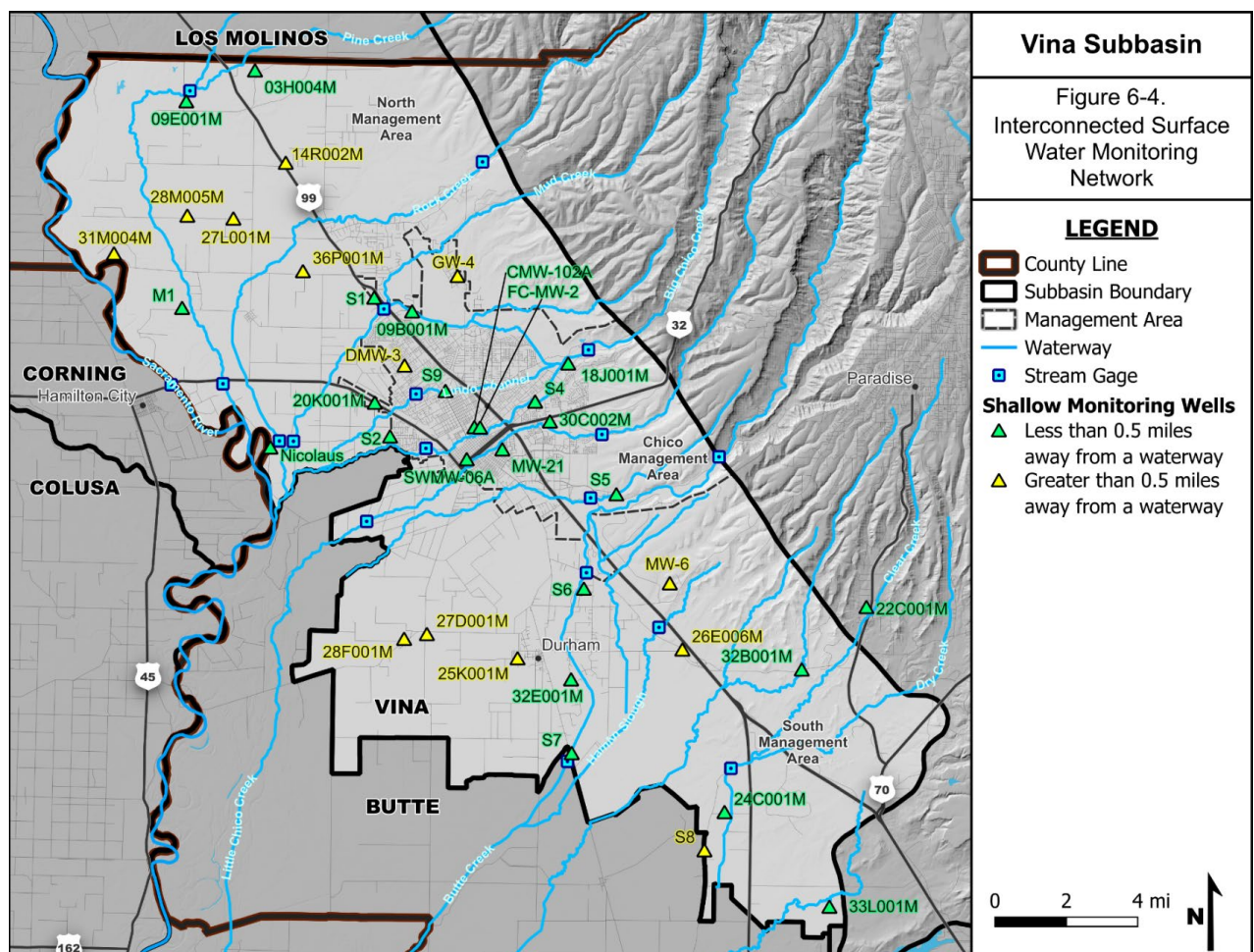


Figure 2. Draft Vina Subbasin interconnected surface water monitoring network, showing shallow monitoring wells and stream gages.

## Regional Context

A regional approach is also warranted because several major surface water systems associated with the Vina Subbasin are regional in nature. The Sacramento River forms a boundary with multiple subbasins, and major tributaries and stream systems cross or influence more than one SGMA planning area, namely Butte Creek. The Vina GSP anticipated inter-basin coordination through the North Sacramento River Corridor (NSRC), including information sharing, joint analysis and evaluation of GSPs, coordination on mutually beneficial activities, and coordinated communication. Collaboration regarding ISW is one of those “mutually beneficial activities” that have been identified by GSA managers from the NSRC group. [Meeting summaries](#) are available from GSA coordination meetings so that individual GSAs and members of the public can stay informed of the NSRC IBC discussions.

Regional discussions are in initial stages regarding ISW through the NSRC group. This memo focuses on the new information available to the Vina Subbasin; however, regional coordination where surface water systems, beneficial uses, and modeling tools extend beyond a single subbasin will be important. More information on the regional discussions will be available in June.

## Recent Public Input Regarding ISW

Attachment B includes input received during the series of stakeholder meetings the Vina GSA held in the Fall of 2025.

## Spectrum of Potential Approaches – ISW Matrix of Options and Considerations

The GSAs have a range of potential approaches for addressing ISW in the Periodic Evaluation. The attached strawman proposal (Attachment A) leans toward a wait-and-see approach, but not an inactive one. It would document progress, define the monitoring network, and establish a clear path for future SMC development while avoiding premature thresholds before DWR guidance and regional coordination are further developed.

Approach Option	What it would do	Advantages	Limitations / Concerns
Meaningful but measured approach <b>(Strawman Proposal, see Attachment A)</b>	Define a broader ISW monitoring network; stop relying on the existing groundwater level RMS network as the primary proxy; document new data and data gaps; wait to set ISW-specific SMC and RMS network selection.	Demonstrates progress in the Periodic Evaluation while preserving flexibility. Allows the GSAs to use new monitoring data, DWR guidance, and regional coordination before adopting thresholds.	Requires clear explanation to DWR and stakeholders that deferral is intentional and based on technical and policy reasons, not inaction.
More immediate SMC approach	Identify ISW RMS sites and establish preliminary ISW-specific MTs and MOs in 2027 GSP amendments.	Shows a proactive response to DWR's RCA and creates a compliance framework now.	Would prematurely set thresholds before DWR guidance (as promised in its RCA), regional coordination, and sufficient local shallow monitoring data are available; would require later revision and additional amendments.
Minimal wait-and-see approach	Describe uncertainty and defer most ISW decisions until future guidance and data are available.	Avoids premature decisions.	May not demonstrate sufficient progress toward addressing DWR's RCA and may be viewed as too limited for the 2027 Periodic Evaluation.

The strawman proposal is the more measured approach, taking a meaningful step forward in the Periodic Evaluation but deferring adoption of ISW-specific SMC until additional data and technical information is available and policy direction is provided by DWR.

## Requested Input and Next Steps

This memo and strawman proposal are provided to support discussion and receive stakeholder input before the GSAs finalize the ISW approach for the Periodic Evaluation and any associated GSP amendments. The proposed approach is to make clear progress by documenting new information, defining the ISW monitoring network, and laying out a path for future SMC development, while deferring ISW-specific SMC decisions until DWR guidance, additional monitoring data, and regional coordination provide a stronger basis for those decisions.

It is anticipated that the Vina Stakeholder Advisory Committee will discuss this strawman proposal at their meeting on May 27, 2026. The Vina GSA and Rock Creek Reclamation District GSA Boards are anticipated to consider this topic at their joint meeting on June 10, 2026. However, the expected timeline is subject to change.

Comments and questions may be directed to [cbuck@buttecounty.ca.gov](mailto:cbuck@buttecounty.ca.gov).

## Attachments

- A. Strawman Proposal: Approach to ISW in the Periodic Evaluation
- B. Stakeholder Input regarding ISW from Fall 2025 Stakeholder Meetings

# Approach to Interconnected Surface Water – Strawman Proposal for Discussion

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The following strawman proposal is intended to frame discussion and solicit stakeholder input. It is written as a proposed approach for the 2027 Periodic Evaluation and any associated GSP amendments, rather than as final GSP language.

## 1. Recognize ISW as a distinct sustainability indicator that requires a distinct monitoring approach.

The Periodic Evaluation would acknowledge that groundwater level RMS wells developed primarily for the chronic lowering of groundwater levels sustainability indicator are not sufficient, by themselves, to evaluate depletions of interconnected surface water. Groundwater levels remain important, but ISW evaluation requires shallow groundwater data near streams, stream stage or streamflow data, and other supporting lines of evidence.

The GSAs would state that the 2022 GSP's groundwater level proxy approach was appropriate as an initial implementation step given limited available data, but that implementation work since 2022 now supports a transition toward a separate ISW monitoring framework.

## 2. Define a broader ISW monitoring network now; identify RMS sites later.

The key near-term action would be to define and document a broader approach for an ISW monitoring network. This network would include shallow groundwater monitoring wells, stream gages, and other relevant data collection locations that can be used to evaluate the timing, location, and direction of stream-aquifer interaction.

At this stage, the network would be considered an ISW monitoring network, not necessarily an ISW RMS compliance network. RMS sites would be selected later after sufficient monitoring data are available to evaluate which sites are reliable, representative, and appropriate for long-term compliance purposes.

This approach recognizes that shallow groundwater monitoring is the key next step. The Periodic Evaluation would clearly identify which existing and newly installed monitoring sites are considered part of the ISW monitoring network (see tables and map below), explain the basis for including them, and identify remaining geographic or technical data gaps.

## 3. Do not set ISW-specific SMC in the 2027 Periodic Evaluation

At this time, the approach would be to not yet establish ISW-specific MTs, MOs, or undesirable result criteria. Instead, the Periodic Evaluation would explain why deferral is appropriate at this time based on the following reasons:

- DWR has not yet released the ISW guidance referenced in its Recommended Corrective Action;
- Regional coordination is ongoing and important because major surface water systems cross or border multiple subbasins (ex. Sacramento River, Butte Creek);
- New shallow groundwater and stream gage data are only beginning to be collected and need time to establish a meaningful period of record;
- Modeling tools are improving but still have uncertainty related to calibration and representation of shallow groundwater-surface water interaction
- Additional work is needed to distinguish general stream gains/losses from pumping-induced depletion; and,
- Current subbasin conditions (i.e. observed groundwater levels are above historical lows) and no increasing trend in groundwater extraction compared to historical amounts suggest that a significant increase in depletion of interconnected surface waters is unlikely to occur over the next five-year implementation period.

The Periodic Evaluation would state that ISW SMC development is expected to be revisited after additional local data collection, regional coordination, and the release of DWR's ISW guidance.

#### 4. Use multiple lines of evidence to characterize ISW.

The Periodic Evaluation would describe ISW conditions using multiple lines of evidence rather than relying on a single dataset or model output (as documented in the [ISW TM](#)). These lines of evidence include, at a high level:

- Shallow groundwater levels and hydrographs;
- Stream stage and streamflow data from existing and newly installed stream gages;
- Updated BBGM results, with explanation of what model outputs represent;
- Isotope results from Big Chico Creek and Butte Creek sampling;
- Topographic survey and LiDAR-based comparisons of streambed elevations and groundwater elevations;
- AEM-based understanding of subsurface conditions and monitoring well classification; and

This framework would allow the GSAs to show clear progress while acknowledging remaining uncertainty.

#### 5. Continue regional coordination before setting ISW SMC.

The Periodic Evaluation would recognize that a subbasin-only approach may not fully address ISW policy and technical issues where rivers or creeks form boundaries or cross subbasins. The GSAs would continue participating in regional discussions, including the North Sacramento River Corridor inter-basin coordination effort and related Sacramento Valley ISW discussions.

## 6. Address DWR's RCA in the Periodic Evaluation

The Periodic Evaluation would include a concise response to each ISW-related RCA. Potential framing is provided below. The GSP would not be amended with respect to ISW.

DWR RCA Topic	Proposed Periodic Evaluation Response	Further Work / Deferred Decision
Use DWR ISW guidance when issued	State that DWR has not yet released ISW guidance. The GSAs will review and incorporate applicable guidance when available over the next implementation period.	Defer ISW-specific SMC until guidance is available and can be considered alongside local data.
Fill data gaps and define segments of interconnectivity and timing	Document the identification of interconnected streams in the subbasin based on the new shallow groundwater monitoring, stream gages, isotope study, BBGM update, AEM-based well classification, and topographic survey information.	Continue data collection through the next implementation period and use annual reports to summarize new information.
Coordinate with agencies and interested parties	Describe stakeholder outreach and regional coordination, including the North Sacramento River Corridor and related regional ISW efforts.	Continue coordination during the next implementation period (2027-2032) with resource agencies, neighboring subbasins, and interested stakeholders before SMC are set.
Clarify monitoring sites used for ISW evaluation	Identify a broader ISW monitoring network and explain why shallow groundwater and stream gage data are the appropriate next step.	Do not designate final ISW RMS sites until the network has a sufficient monitoring record.
Review model inputs/outputs for stream gains and losses	Use updated BBGM results and clearly distinguish overall stream-aquifer interaction from pumping-induced depletion where possible.	Continue model refinement and regional analysis to better support future SMC development and quantification of depletion due to groundwater pumping.

## 7. ISW Broad Monitoring Network

Four (4) stream gages were installed using SGM grant funds and eight (8) gages were installed using funding from the California Stream Gage Improvement Program (CalSIP) for a total of nineteen (19) stream gages across the Subbasin, as listed in **Table 1**

**Table 1. Vina Subbasin Active Surface Water Stream Gauges (to be finalized once installation of new stream gages is completed in 2026)**

Stream Monitored	Gage ID	Gage Network	Measurement Frequency	Status	Start Date
<b>Vina - North Management Area</b>					
Sacramento River	VIN	CDEC	Hourly	Active	1/1/1984
Sacramento River	HMC	CDEC	Hourly	Active	6/19/1991
Mud Creek	CS4 Mud/Rock (lower)	CDEC		Proposed	
Pine Creek	C22 Pine (lower)	CDEC		Proposed	
Pine Creek	CS1 Pine (upper)	CDEC		Proposed	
Rock Creek	NEW_ROCK	CDEC		Proposed	
Rock Creek	Rock Creek and West Sacramento	CDEC		Proposed	
<b>Vina - Chico Management Area</b>					
Big Chico Creek	BIC	CDEC	Hourly	Active	7/21/1997
Lindo Channel	LCH	CDEC	Hourly	Active	1/25/2027
Mud Creek	MUC	CDEC	Hourly	Active	1/25/2007
Butte Creek	BCD	CDEC	Hourly	Active	4/7/1997
Butte Creek	11390000	USGS	Hourly	Active	3/14/1997
Big Chico Creek	NEW_BCC	GSA		Proposed	
Comanche Creek	NEW_COMANCHE	CDEC		Proposed	
Little Chico Creek	NEW_LCC_US	GSA		Proposed	
<b>Vina - South Management Area</b>					
Butte Creek	NEW_BUTTE	GSA		Proposed	
Dry Creek	NEW_DRY	CDEC		Proposed	
Hamlin Slough	NEW_HAM	CDEC		Proposed	
Little Chico Creek	NEW_LCC_DS	GSA		Proposed	

Shallow monitoring wells throughout the Subbasin have been preliminarily selected as representative of shallow groundwater and conditions near streams. This includes newly installed wells currently being drilled (spring 2026). See Table 2 for list of wells.

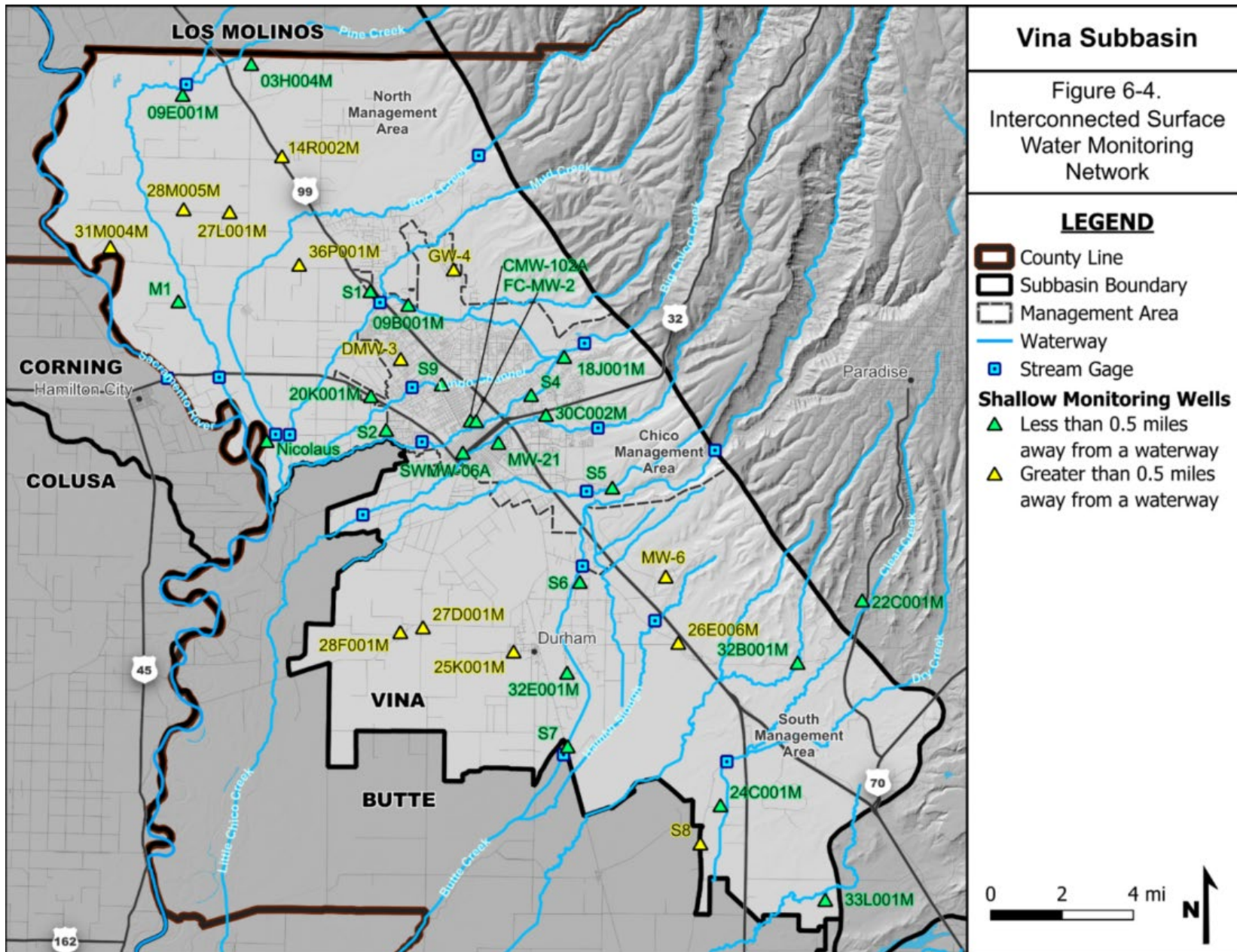
**Table 2. Vina Subbasin ISW Broad Monitoring Network**

Well ID	State Well Number	MCW <sup>1</sup>	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)
03H004M	23N01W03H004M	Yes	Observation	115	3/30/2012	Monthly	Pine Creek	0.40
09E001M	23N01W09E001M	No	Irrigation	110	2/7/1947	Quarterly	Pine Creek	0.20
14R002M	23N01W14R002M	No	Irrigation	183	11/13/1985	Quarterly	Rock Creek	1.65
27L001M	23N01W27L001M	No	Residential	102	3/10/1976	Quarterly	Rock Creek	1.72
28M005M	23N01W28M005M	Yes	Observation	72	1/15/2009	Hourly	Pine Creek	0.82
31M004M	23N01W31M004M	Yes	Observation	106	7/4/2008	Hourly	Sacramento River	0.75
36P001M	23N01W36P001M	No	Residential	165	8/20/1959	Monthly	Rock Creek	0.71
TNC Well	TBD	No	Observation	70		Biannually	Sacramento River	0.35
M1*	TBD	Yes	Observation	TBD		Quarterly	Pine Creek	0.26
S2*	TBD	No	Observation	TBD		Quarterly	Big Chico Creek	0.15
09B001M	22N01E09B001M	No	Residential	156	5/9/2001	Quarterly	Sycamore Creek	0.10
20K001M	22N01E20K001M	No	Residential	110	5/10/1961	Quarterly	Lindo Channel	0.34
30C002M	22N02E30C002M	No	Observation	203	12/19/2001	Hourly	Little Chico Creek	0.12
18J001M	22N02E18J001M	No	Residential	180	4/6/2001	Quarterly	Big Chico Creek	0.13
CMW-102A		No	Observation	36.5		Biannually	Big Chico Creek	0.50
DMW-3		No	Observation	55		Biannually	Lindo Channel	0.82
FC-MW-2		No	Observation	40		Biannually	Big Chico Creek	0.50
GW-4		No	Observation	115		Biannually	Mud Creek	0.50
MW-21		No	Observation	25	6/28/2004	Biannually	Little Chico Creek	0.19
SWMW-06A		No	Observation	35	8/29/2005	Biannually	Little Chico Creek	0.143
S1*	TBD	No	Observation	TBD		Quarterly	Mud Creek	0.33

Well ID	State Well Number	MCW <sup>1</sup>	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)
S4*	TBD	No	Observation	TBD		Quarterly	Big Chico Creek	0.08
S5*	TBD	No	Observation	TBD		Quarterly	Comanche Creek	0.06
S9*	TBD	No	Observation	TBD		Quarterly	Lindo Channel	0.05
25K001M	21N01E25K001M	No	Residential	93	4/8/1993	Quarterly	Butte Creek	1.35
27D001M	21N01E27D001M	No	Observation	112	10/9/1946	Quarterly	-	-
28F001M	21N01E28F001M	No	Irrigation	173	8/20/1998	Quarterly	-	-
32E001M	21N02E32E001M	No	Irrigation	184	3/26/2009	Quarterly	Butte Creek	0.33
22C001M	21N03E22C001M	No	Residential	143	3/19/2001	Quarterly	Clear Creek	0.15
33L001M	20N03E33L001M	No	Observation	101	8/12/1999	Hourly	Cottonwood Creek	0.21
24C001M	20N02E24C001M	Yes	Observation	155	12/29/1999	Hourly	Dry Creek	0.20
32B001M	21N03E32B001M	No	Observation	57	10/15/1999	Quarterly	Little Dry Creek	0.01
26E006M	21N02E26E006M	Yes	Observation	179	9/13/2007	Hourly	Hamlin Slough	0.88
MW-6		No	Observation			Biannually	Hamlin Slough	0.52
S*		No	Observation	TBD		Quarterly	Butte Creek	0.13
S7*		No	Observation	TBD		Quarterly	Butte Creek	0.04
S8*		No	Observation	TBD		Quarterly	Dry Creek	0.51

1. Multi-Completion Well - single drilled borehole for a monitoring well used to monitor multiple, discrete depths of an aquifer

\*S# - New wells currently being constructed.



**Vina Subbasin**

Figure 6-4.  
Interconnected Surface  
Water Monitoring  
Network

- LEGEND**
- County Line
  - Subbasin Boundary
  - Management Area
  - Waterway
  - Stream Gauge
  - Shallow Monitoring Wells**
    - Less than 0.5 miles away from a waterway
    - Greater than 0.5 miles away from a waterway

## ISW-Related Stakeholder Feedback Summary

### *Vina Subbasin Fall 2025 Stakeholder Meetings*

As part of its preparation of the 2027 Periodic Evaluation, the Vina GSA hosted a series of stakeholder meetings in the Fall of 2025 to gather preliminary feedback on potential technical approaches for Groundwater Levels Sustainable Management Criteria and Interconnected Surface Waters (ISW) Sustainable Management Criteria. Members of the Butte County Local Expert Group (LEG), and individuals and organizations representing environmental users, domestic well owners, and agricultural groundwater users were each invited to meet with GSA staff and technical consultants in small group venues on October 14, October 27, and November 13, 2025. The following summary is a combination of input/comments relevant to the ISW topic received from all of these discussions and have been pulled from the Meeting Summaries produced from each of the individual meetings and the staff memo prepared for the GSA Boards. The complete meeting summaries are included in the Vina GSA [Board packet](#) from the December 10, 2025 joint board meeting.

Participants were asked to weigh in on the following questions:

- What reactions or questions do you have about the proposed ISW RMS Network?
- Any recommended adjustments to the network? Other considerations for the LWA team?
- Reactions or thoughts to the proposed approach and timeline of setting ISW SMC?

### Summary of Key ISW-Related Stakeholder Input Received

Stakeholder feedback generally supported continued refinement of the ISW monitoring network, but groups differed on how quickly the GSA should move toward setting ISW-specific Sustainable Management Criteria (SMC). Environmental representatives encouraged stronger protection of groundwater dependent ecosystems (GDEs), interconnected surface waters (ISWs), urban forests, valley oaks, and other groundwater-dependent vegetation. Technical experts emphasized the need for better visual explanations of stream connectivity, disconnection thresholds, and model outputs. Agricultural representatives urged caution, flexibility, and continued coordination with neighboring subbasins before locking in ISW SMC. Across groups, there was recognition that data gaps remain related to ISW, GDEs, shallow wells, stream connectivity, and modeling.

The stakeholder meetings were structured around the proposed groundwater level and ISW Representative Monitoring Site (RMS) networks, potential SMC approaches, and DWR's corrective actions for surface water depletions. Participants were specifically asked for reactions to the proposed ISW RMS network, recommended adjustments or additional considerations for that network, and thoughts on the proposed approach and timeline for developing ISW SMC.

### Verbatim ISW-Related Comments/Input from Meeting Summaries

The bullets below are pulled verbatim from the meeting summaries and related summary materials

#### Local Expert Group

- Include discussion of stream conditions and connectivity when presenting water balance information.
- Recognize that ISW/GDE monitoring may not capture effects on the urban canopy.
- Incorporate cross-section graphics to visually demonstrate where and when stream disconnection occurs.

### **Additional ISW-related discussion from the Local Expert Group meeting summary**

- Laura presented the proposed approach for developing an Interconnected Surface Water monitoring network (noting that the original GSP did not include an ISW specific RMS network) and potential changes to the SMC.
- A participant noted that Big Chico Creek receives significant attention, but the one well in the area is problematic, and the downtown well is too new to be considered reliable, so how will this area be monitored?
- In response to a question from Jim about using GWL as a proxy for flux, Laura noted that without streamflows, they can't calculate flux. Stream gages are planned to be installed in the next year, though.
- Todd elevated a concern he has heard in other regions related to protecting Groundwater Dependent Ecosystems (GDE) that aren't strictly riparian. He noted that ISW RMS wells would not be able to help track conditions in areas that are more distant from streams and creeks.
- There was a question about why transects couldn't be used like other GSPs. Laura responded that streams in this region are more dynamic and require assessments of where streams are losing and gaining which then inform locations of stream gauges and new wells.

### **Additional modeling-related ISW comments from the Local Expert Group meeting summary**

- There was discussion about the model showing equilibrium primarily impacted by groundwater that used to flow into streams but is now being intercepted by pumping.
- Christina highlighted that in the Vina Subbasin, water balance is not only about groundwater levels, but stream conditions also need to be considered.
- It was suggested that future discussions include this context and focus on other indicators that are relevant such as stream connectivity.
- Todd noted that since the model assumes streams will not go dry, it raises the question of what the threshold is for when streams become disconnected.
- Kamie Loeser suggested including a cross-section diagram to visually show when disconnection occurs for ISWs.
- Laura noted the model is currently overestimating certain conditions and suggested that a budgeted diagram approach might be more effective in communicating with the public.

### **Environmental Representatives**

Discussion and comments centered on GDEs, Valley Oaks, and MTs related to GWL SMC. However, the following feedback notes are relevant to ISW:

- Raise Minimum Thresholds to provide stronger protection for GDEs and ISWs.

### **Additional environmental meeting discussion related to ISW/GDEs**

- Is it possible for the GSA to use the new wells that were installed to track ISWs to also inform the GWL monitoring network? In particular, were any of those new wells installed in areas near Groundwater Dependent Ecosystems (GDE)? Response: Laura clarified that under SGMA, RMS networks for different sustainability indicators need to be kept separate, but they could interact depending on what the data looks like. In any case, newly drilled wells cannot be used as an RMS until the 2032 GSP evaluation.
- Participants highlighted that valley oaks are not limited to riparian areas, and expressed concern that the ISW RMS network would not be protective of valley oaks. There was a suggestion to assess water levels and soil health, since suitable conditions allow valley oaks to thrive.

### **Domestic Well Users**

Because the meeting participants prioritized discussion on the GWL SMC, there was very little time to share information or discuss the ISW SMC.

## Agricultural Representatives

- For ISW, several participants expressed concern about moving forward given existing data gaps, recommending the GSA proceed carefully and ensure decisions can be revisited as monitoring improves.
- Proceed cautiously with ISW SMC development given existing data gaps; ensure decisions can be adjusted in future evaluations as new data may warrant adjustments.
- Continue coordination with neighboring subbasins, especially regarding ISW connectivity and model calibration.

## Additional agricultural meeting discussion related to ISW/GDEs

- Purpose and Methodology
  - Isn't the criteria for ISW measured in volume? Why is the GSA proposing an SMC related to groundwater levels?

LWA explained that eventually the goal is for the GSA to calculate stream depletion volumes, but more data is needed and the model (which serves as the current starting point) requires more calibration. Laura noted that this is in line with what other basins are doing.
  - Participants asked about the benefits of ISW monitoring. Laura explained that it helps inform SMCs to prevent shifts in stream conditions (where streams are gaining versus losing) and avoid further disconnection from the aquifer. It also informs whether features like urban forests rely on perched aquifers or ISWs.
  - Questions arose about whether ISW data would benefit neighboring subbasins. Laura noted that coordination is underway to develop a reasonable ISW approach across basins. For the 2027 Periodic Evaluation, most data will come from groundwater levels while ISW data improves and is used to improve models.
- RMS Selection and Data Gaps
  - How are stream depletion percentages calculated? How were the new shallow well sites selected? Christina explained that the model calculates these daily, but more data is needed to validate results. The model can be used to inform where new wells should be installed. According to the model, streams east of the 99 freeway are less likely to be interconnected with the groundwater, but the GSA plans to place one well in the area to observe conditions and help characterize the connection (or lack thereof).
  - Participants noted that there appears to be an overlap between the ISW and GWL monitoring wells. Laura acknowledged there are two overlapping wells, and Christina added that when the Butte Subbasin has overlapping wells, so the one with the more limiting metric becomes the limiting factor. A participant requested flexibility in ISW MTs to account for this overlap.
  - Several participants expressed concern about moving forward given the existing data gaps, suggesting it would be better to wait until the next Periodic Evaluation. Some felt there was insufficient data and worried MTs would be "locked in" at a restrictive level.
  - Participants noted we all want a plentiful water supply. We just do not want to make a decision that we cannot change in the future.