



CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

715 P Street, 8th Floor | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

February 27, 2025

Justin Jenson

Tehama County Flood Control and Water Conservation District GSA – Los Molinos
9380 San Benito Avenue
Gerber, CA 96035-9701
jjenson@tcpw.ca.gov

RE: Approved Determination of the 2024 Groundwater Sustainability Plan Submitted for the Sacramento Valley – Los Molinos Subbasin

Dear Justin Jenson,

The Department of Water Resources (Department) has evaluated the 2024 groundwater sustainability plan (GSP) for the Sacramento Valley – Los Molinos Subbasin in response to the Department's Incomplete Determination on October 26, 2023, and has determined the GSP is approved. The approval is based on recommendations from the Staff Report, included as an exhibit to the attached Statement of Findings, which describes that the Sacramento Valley – Los Molinos Subbasin GSP has taken sufficient action to correct deficiencies identified by the Department, satisfies the objectives of the Sustainable Groundwater Management Act (SGMA), and substantially complies with the GSP Regulations. The Staff Report also proposes recommended corrective actions that the Department believes will enhance the GSP and facilitate future evaluation by the Department. The Department strongly encourages the recommended corrective actions be given due consideration and suggests incorporating all resulting changes to the GSP in future updates.

Recognizing SGMA sets a long-term horizon for groundwater sustainability agencies (GSAs) to achieve their basin sustainability goals, monitoring progress is fundamental for successful implementation. GSAs are required to evaluate their GSPs at least every five years and whenever the Plan is amended, and to provide a written assessment to the Department. Accordingly, the Department will evaluate approved GSPs and issue an assessment at least every five years. The GSAs are required to submit their periodic evaluation of the Sacramento Valley – Los Molinos Subbasin GSP no later than January 31, 2027.

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

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director
Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Determination of Approval of the Sacramento Valley – Los Molinos Subbasin 2024 Groundwater Sustainability Plan

**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES**

**STATEMENT OF FINDINGS REGARDING THE
APPROVAL OF THE
SACRAMENTO VALLEY – LOS MOLINOS SUBBASIN
2024 GROUNDWATER SUSTAINABILITY PLAN**

Under the Sustainable Groundwater Management Act (SGMA or Act), the Department of Water Resources (Department) is required to evaluate whether a submitted groundwater sustainability plan (GSP or Plan) conforms to specific requirements of the SGMA, is likely to achieve the sustainability goal for the basin covered by the Plan, and whether the Plan adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin.¹ The Department is directed to issue an assessment of the Plan within two years of its submission.² If a Plan is determined to be Incomplete, the Department must identify deficiencies that preclude approval of the Plan and identify corrective actions required to make the Plan substantially compliant with SGMA and the GSP Regulations. The Groundwater Sustainability Agency (GSA) has up to 180 days from the date the Department issues its assessment to make the necessary corrections and submit a revised Plan.³ When evaluating a revised GSP that was determined to be incomplete, the Department reviews the materials provided by the GSA (e.g., revised or amended GSP) to address the deficiencies by the submission deadline. Part of the Department's review focuses on how the Agency addressed the deficiencies that precluded approval of the Plan. The Department shall find a Plan previously determined to be incomplete to be either:

1. Approved, if the Department determines the Agency has sufficiently addressed those deficiencies, the Department may evaluate other components of the Plan, particularly to assess whether and, if so, how revisions to address deficiencies may have affected other components of a Plan or its likelihood of achieving sustainable groundwater management.
2. Inadequate if, after consultation with the State Water Resources Control Board, the Agency has not taken sufficient action to correct the deficiencies previously identified by the Department.

This Statement of Findings explains the Department's determination regarding the revised Plan for the Sacramento Valley – Los Molinos Subbasin (Basin No. 5-021-56) by

¹ Water Code § 10733

² Water Code § 10733.4

³ 23 CCR § 355.2(e)(2)

the Tehama County Flood Control and Water Conservation District GSA - Los Molinos (GSA or Agency) submitted on April 22, 2024 (referred to as the 2024 GSP or 2024 Plan).

Department management have discussed the 2024 Plan with Department staff and have reviewed the written assessment titled Sustainable Groundwater Management Program Assessment of Incomplete Groundwater Sustainability Plan 2025 Staff Report (Staff Report), attached as Exhibit A, which recommends approval of the 2024 GSP. Department management is satisfied that staff have conducted a thorough evaluation and assessment of the 2024 Plan and concurs with staff's recommendations and all the recommended corrective actions. The Department therefore **APPROVES** the 2024 Plan and makes the following findings:

- A. On January 31, 2022, the GSA submitted a GSP (referred to as the 2022 GSP or 2022 Plan) for the Department's evaluation.
- B. On October 26, 2023, the Department issued a Staff Report (referred to as the 2023 Incomplete Determination) and Findings determining the 2022 GSP to be incomplete, because the 2022 GSP did not satisfy the requirements of SGMA, nor did it substantially comply with the GSP Regulations. The Department's 2023 Incomplete Determination identified the following deficiency that precluded approval and provided the GSA with a corrective action that was intended to address the deficiency.
 1. Deficiency 1. The GSP does not establish sustainable management criteria for chronic lowering of groundwater levels in a manner substantially compliant with the GPS regulations.

The Department provided the Agency with 180 days to address the deficiency.⁴

- C. On April 22, 2024, the GSA submitted a revised Plan (the 2024 GSP) to the Department. After staff's thorough evaluation of the 2024 Plan, the Department finds:
 1. The Agency has taken sufficient actions to correct Deficiency 1, such that, at this time, the Department no longer finds this deficiency to preclude approval. The 2024 GSP has sufficiently identified the impacts to beneficial uses and users that would occur at an undesirable condition, and has provided management criteria to identify the undesirable condition that reflect the identified impacts.

The 2024 Plan satisfies the required conditions as outlined in § 355.4(a) of the GSP Regulations⁵:

⁴ 23 CCR § 355.2(e)(2)

⁵ 23 CCR § 350 et seq.

1. The Plan was complete, meaning it generally appeared to include the information required by the Act and the GSP Regulations sufficient to warrant a thorough evaluation and issuance of an assessment by the Department.⁶
 2. The Plan, either on its own or in coordination with other Plans, appears to cover the entire Subbasin sufficient to warrant a thorough evaluation.⁷
- D. The general standards the Department applied in its evaluation and assessment of the Plan are: (1) “conformance” with the specified statutory requirements, (2) “substantial compliance” with the GSP Regulations, (3) whether the Plan is likely to achieve the sustainability goal for the Subbasin within 20 years of the implementation of the Plan, and (4) whether the Plan adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin.⁸ Application of these standards requires exercise of the Department’s expertise, judgment, and discretion when making its determination of whether a Plan should be deemed “approved,” “incomplete,” or “inadequate.”

The statutes and GSP Regulations require Plans to include and address a multitude and wide range of informational and technical components. The Department has observed a diverse array of approaches to addressing these technical and informational components being used by GSAs in different basins throughout the state. The Department does not apply a set formula or criterion that would require a particular outcome based on how a Plan addresses any one of SGMA’s numerous informational and technical components. The Department finds that affording flexibility and discretion to local GSAs is consistent with the standards identified above; the state policy that sustainable groundwater management is best achieved locally through the development, implementation, and updating of local plans and programs⁹; and the Legislature’s express intent under SGMA that groundwater basins be managed through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner.¹⁰ The Department’s final determination is made based on the entirety of the Plan’s contents on a case-by-case basis, considering and weighing factors relevant to the particular Plan and Subbasin under review.

⁶ 23 CCR § 355.4(a)(2)

⁷ 23 CCR § 355.4(a)(3)

⁸ Water Code § 10733

⁹ Water Code § 113

¹⁰ Water Code § 10720.1(h)

- E. In making these findings and Plan determination, the Department also recognized that: (1) the Department maintains continuing oversight and jurisdiction to ensure the Plan is adequately implemented; (2) the Legislature intended SGMA to be implemented over many years; (3) SGMA provides Plans 20 years of implementation to achieve the sustainability goal in a Subbasin (with the possibility that the Department may grant GSAs an additional five years upon request if the GSA has made satisfactory progress toward sustainability); and, (4) local agencies acting as GSAs are authorized, but not required, to address undesirable results that occurred prior to enactment of SGMA.¹¹
- F. The Plan conforms with Water Code §§ 10727.2 and 10727.4, substantially complies with 23 CCR § 355.4, and appears likely to achieve the sustainability goal for the Subbasin. It does not appear at this time that the Plan will adversely affect the ability of adjacent basins to implement their GSPs or impede achievement of sustainability goals.
1. The sustainable management criteria and the Plan's goal is "to develop PMAs that result in the sustainable management of the groundwater resources of the Subbasin for long-term community, financial, and environmental benefits of residents and businesses in the Subbasin. This GSP outlines the approach to achieve sustainable management of groundwater resources within 20 years, while maintaining the unique cultural, community, and agricultural aspects of the Subbasin".¹² The Plan relies on credible information and science to quantify the groundwater conditions that the Plan seeks to avoid and provides an objective way to determine whether the Subbasin is being managed sustainably in accordance with SGMA.¹³
 2. The Plan has identified areas for improvement of its Plan including addressing data gaps related to hydrogeological conceptual model, groundwater conditions, water budgets, and monitoring networks, and plans to incorporate new information into the numerical model.¹⁴
 3. The projects and management actions proposed are designed to... recharge groundwater and perform voluntary demand management to mitigate reductions in groundwater storage and, groundwater level decline. They also include well mitigation to address dry wells. The projects and management actions are reasonable and commensurate with the level of understanding of the Subbasin setting. The projects and management actions described in the Plan provide a feasible approach to achieving the

¹¹ Water Code §§ 10721(r); 10727.2(b); 10733(a); 10733.8.

¹² 2024 Los Molinos GSP, Section 3.1.1, p. 295.

¹³ 23 CCR § 355.4(b)(1)

¹⁴ 23 CCR § 355.4(b)(2)

Subbasin's sustainability goal and should provide the GSA with greater versatility to adapt and respond to changing conditions and future challenges during GSP implementation.¹⁵

4. The Plan provides a detailed explanation of how the varied interests of groundwater uses and users in the Subbasin were considered in developing the sustainable management criteria and how those interests, including domestic wells, would be impacted by the chosen minimum thresholds.¹⁶
5. The Plan's projects and management actions appear feasible at this time and capable of preventing undesirable results and ensuring that the Subbasin is operated within its sustainable yield within 20 years. The Department will continue to monitor Plan implementation and reserves the right to change its determination if projects and management actions are not implemented or appear unlikely to prevent undesirable results or achieve sustainability within SGMA timeframes.¹⁷
6. The Plan includes a reasonable assessment of overdraft conditions and includes reasonable means to mitigate overdraft, if present.¹⁸
7. At this time, it does not appear that the Plan will adversely affect the ability of an adjacent basin to implement its GSP or impede achievement of sustainability goals in an adjacent basin. The GSA has established similar sustainable management criteria to neighboring subbasins.¹⁹
8. Because a single plan was submitted for the Subbasin, a coordination agreement was not required.²⁰
9. The Tehama County Flood Control and Water Conservation District has historically developed and implemented a groundwater management plan and basin management objectives in support of the groundwater management plan. The GSA's history of groundwater management provide a reasonable level of confidence that the GSA has the legal authority and financial resources necessary to implement the Plan.²¹
10. Through review of the Plan and consideration of public comments, the Department determines that the GSA adequately responded to comments that raised credible technical or policy issues with the Plan, sufficient to warrant approval of the Plan at this time. The Department also notes that

¹⁵ 23 CCR § 355.4(b)(3)

¹⁶ 23 CCR § 355.4(b)(4)

¹⁷ 23 CCR § 355.4(b)(5)

¹⁸ 23 CCR § 355.4(b)(6)

¹⁹ 23 CCR § 355.4(b)(7)

²⁰ 23 CCR § 355.4(b)(8)

²¹ 23 CCR § 355.4(b)(9)

the recommended corrective actions included in the Staff Report are important to address certain technical or policy issues that were raised and, if not addressed before future, subsequent plan evaluations, may preclude approval of the Plan in those future evaluations. (23 CCR § 355.4(b)(10).)

G. In addition to the grounds listed above, DWR also finds that:

1. The Department developed its GSP Regulations consistent with and intending to further the State's human right to water policy through implementation of SGMA and the Regulations, primarily by achieving sustainable groundwater management in a basin. By ensuring substantial compliance with the GSP Regulations, the Department has considered the state policy regarding the human right to water in its evaluation of the Plan.²²
2. The Plan acknowledges and identifies interconnected surface waters within the Subbasin. The GSA proposes initial sustainable management criteria to manage this sustainability indicator and measures to improve understanding and management of interconnected surface water. The GSA acknowledges, and the Department agrees, many data gaps related to interconnected surface water exist. The GSA should continue filling data gaps, collecting additional monitoring data, and coordinating with resources agencies and interested parties to understand beneficial uses and users that may be impacted by depletions of interconnected surface water caused by groundwater pumping. Future periodic evaluations of the Plan and amendments to the Plan should aim to improve the initial sustainable management criteria as more information and improved methodology becomes available.
3. Projections of future Subbasin extractions are likely to stay within current and historic ranges, at least until the next periodic evaluation by the GSA and the Department. Subbasin groundwater levels and other SGMA sustainability indicators appear unlikely to substantially deteriorate while the GSA implements the Department's recommended corrective actions.
4. The California Environmental Quality Act²³ does not apply to the Department's evaluation and assessment of the Plan.

²² Water Code § 106.3; 23 CCR § 350.4(g)

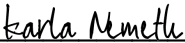
²³ Public Resources Code § 21000 *et seq.*

Statement of Findings
Sacramento Valley – Los Molinos Subbasin (No. 5-021.56)

February 27, 2025

Accordingly, the 2024 GSP submitted by the Agency for the Sacramento Valley – Los Molinos Subbasin is hereby **APPROVED**. The recommended corrective actions identified in the Staff Report will assist the Department’s future review of the Plan’s implementation for consistency with SGMA and the Department therefore recommends the Agency address them in the next Periodic Evaluation, which is set to be submitted by January 31, 2027, as required by Water Code § 10733.8. Failure to address the Department’s recommended corrective actions before future, subsequent plan evaluations, may lead to a Plan being determined incomplete or inadequate.

Signed:



Karla Nemeth, Director
Date: February 27, 2025

Exhibit A: Groundwater Sustainability Plan Assessment Staff Report – Sacramento Valley
– Los Molinos Subbasin

**State of California
Department of Water Resources
Sustainable Groundwater Management Program
Reassessment of Incomplete
Groundwater Sustainability Plan
2025 Staff Report**

Groundwater Basin Name: Sacramento Valley – Los Molinos Subbasin (No. 5-021.56)
Submitting Agency: Tehama County Flood Control and Water Conservation District Groundwater Sustainability Agency – Los Molinos
Submittal Type: Revised Plan in Response to Incomplete Determination
Submittal Date: April 22, 2024
Recommendation: Approve
Date: February 27, 2025

On April 22, 2024, the Tehama County Flood Control and Water Conservation District Groundwater Sustainability Agency (GSA or Agency) – Los Molinos resubmitted the Los Molinos Groundwater Sustainability Plan (2024 GSP or 2024 Plan)¹ for the Los Molinos Subbasin (Subbasin) to the Department of Water Resources (Department or DWR) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA)² and GSP Regulations.³ This was in response to the Department’s Incomplete Determination⁴ of the initial GSP (2022 GSP or 2022 Plan)⁵ on October 26, 2023.⁶

After evaluation and assessment, Department staff conclude the GSAs have taken sufficient actions to correct deficiencies identified by the Department; however, Department staff have provided additional corrective actions which will be required to be addressed by the Plan’s periodic evaluation.

Overall, Department staff conclude the 2024 Plan contains the required components of a GSP, demonstrates a thorough understanding of the Subbasin based on what appears to be the best available science and information, sets well explained, supported, and reasonable sustainable management criteria to prevent undesirable results as defined in the 2024 Plan, and proposes a set of projects and management actions that, if successfully implemented, and address recommended corrective actions, are likely to

¹ 2024 Los Molinos GSP. <https://sgma.water.ca.gov/portal/service/gspdocument/download/10064>.

² Water Code § 10720 *et seq.*

³ 23 CCR § 350 *et seq.*

⁴ <https://sgma.water.ca.gov/portal/service/gspdocument/download/9961>.

⁵ 2022 Los Molinos GSP. <https://sgma.water.ca.gov/portal/service/gspdocument/download/8085>.

⁶ Water Code § 10733.4(b); 23 CCR § 355.4(a)(4).

achieve the sustainability goal defined for the Subbasin.⁷ Department staff will continue to monitor and evaluate the Subbasin's progress toward achieving the sustainability goal through annual reporting and future periodic evaluations of the 2024 GSP and its implementation.

- ***Based on the evaluation of the 2024 Plan, Department staff recommend the Plan be approved.***

This assessment includes six sections:

- **Section 1 – Summary**: Overview of the Department Staff's assessment and recommendation.
- **Section 2 – Evaluation Criteria**: Describes the legislative requirements and the Department's evaluation criteria.
- **Section 3 – Required Conditions**: Describes the submission requirements of an incomplete resubmittal to be evaluated by the Department.
- **Section 4 – Deficiency Evaluation**: Provides an assessment of whether and how the contents included in the GSP resubmittal addressed the deficiencies identified by the Department in the initial determination.
- **Section 5 – Plan Evaluation**: Provides a detailed assessment of the contents included in the GSP organized by each Subarticle outlined in the GSP Regulations.
- **Section 6 – Staff Recommendation**: Includes the staff recommendation for the 2024 Plan.

⁷ 23 CCR § 354.24.

1 SUMMARY

Department staff recommend **approval** of the 2024 Los Molinos Subbasin GSP and have identified recommended corrective actions designed to address shortcomings of the Plan described in this Staff Report. In Section 4 of this report, Department staff reviewed how the 2022 Plan was updated in the 2024 Plan by comparing content from each plan in order to determine if sufficient action was taken in response to deficiencies identified in the 2022 plan. In Section 5, Department staff reviewed content in the GSP for its substantial compliance with GSP Regulations and have provided recommended corrective actions for components of the plan that need improvement to support substantial compliance with GSP Regulations and for Subbasin sustainability.

The GSA has identified areas for improvement of its Plan including addressing data gaps related to hydrogeological conceptual model and groundwater conditions, updating its water budgets, incorporating new information into the numerical model, and expanding monitoring networks. Department staff concur that those items are important and recommend the GSA address them as soon as possible. Department staff have also identified additional recommended corrective actions that the GSA should consider for the first periodic evaluation of the Plan (see Section 6). Addressing these recommended corrective actions will be important to demonstrate, on an ongoing basis, that implementation of the Plan is likely to achieve the sustainability goal. The recommended corrective actions generally focus on the following:

- 1) Immediately implement a process for the public to report dry wells if they occur
- 2) Provide criteria used to select tessellation polygons and explain how they consider beneficial uses and users
- 3) Provide rationale for identifying two principal aquifers including the significant difference between them including a description of their interconnection or lack of interconnection, and fill data gaps in the hydrogeologic conceptual model
- 4) Revise sustainable management criteria for degraded water quality
- 5) Revise sustainable management criteria for subsidence
- 6) Revise sustainable management criteria for interconnected surface water
- 7) Fill data gaps and expand monitoring networks so that the GSA may understand conditions quantify water budget components and identify impacts to beneficial uses and users.

2 EVALUATION CRITERIA

The Department evaluates whether a Plan conforms to the statutory requirements of SGMA⁸ and is likely to achieve the basin's sustainability goal,⁹ whether evaluating a basin's first Plan,¹⁰ a Plan previously determined incomplete,¹¹ an amended Plan,¹² or a GSA's periodic evaluation to an approved Plan.¹³ To achieve the sustainability goal, each version of the Plan must demonstrate that implementation will lead to sustainable groundwater management, which means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.¹⁴ The Department is also required to evaluate, on an ongoing basis, whether the Plan will adversely affect the ability of an adjacent basin to implement its groundwater sustainability program or achieve its sustainability goal.¹⁵

The Plan evaluated in this Staff Report was previously determined to be incomplete. An incomplete Plan is one which had one or more deficiencies that precluded its initial approval, may not have had supporting information that was sufficiently detailed or analyses that were sufficiently thorough and reasonable, or Department staff determined it was unlikely the GSAs in the basin could achieve the sustainability goal. After a GSA has been afforded up to 180 days to address the deficiencies and based on the GSA's efforts, the Department can either approve¹⁶ the Plan or determine the Plan inadequate.¹⁷

The Department's evaluation and assessment of a Plan previously determined to be incomplete, as presented in this Staff Report, continues to follow Article 6 of the GSP Regulations¹⁸ to determine whether the Plan, with revisions or additions prepared by the GSA, complies with SGMA and substantially complies with the GSP Regulations.¹⁹ As stated in the GSP Regulations, "substantial compliance means that the supporting information is sufficiently detailed and the analyses sufficiently thorough and reasonable, in the judgment of the Department, to evaluate the Plan, and the Department determines that any discrepancy would not materially affect the ability of the Agency to achieve the sustainability goal for the basin, or the ability of the Department to evaluate the likelihood of the Plan to attain that goal."²⁰

⁸ Water Code §§ 10727.2, 10727.4, 10727.6.

⁹ Water Code § 10733; 23 CCR § 354.24.

¹⁰ Water Code § 10720.7.

¹¹ 23 CCR § 355.2(e)(2).

¹² 23 CCR § 355.10.

¹³ 23 CCR § 355.6.

¹⁴ Water Code § 10721(v).

¹⁵ Water Code § 10733(c).

¹⁶ 23 CCR §§ 355.2(e)(1).

¹⁷ 23 CCR §§ 355.2(e)(3).

¹⁸ 23 CCR § 355 *et seq.*

¹⁹ 23 CCR § 350 *et seq.*

²⁰ 23 CCR § 355.4(b).

The recommendation to approve a Plan previously determined to be incomplete does not signify that Department staff, were they to exercise the professional judgment required to develop a Plan for the basin, would make the same assumptions and interpretations as those contained in the revised Plan, but simply that Department staff have determined that the modified assumptions and interpretations relied upon by the submitting GSA(s) are supported by adequate, credible evidence, and are scientifically reasonable. The assessment of a Plan previously determined to be incomplete may involve the review of new information presented by the GSAs, including models and assumptions, and an evaluation of that information based on scientific reasonableness. In conducting its assessment, Department staff does not recalculate or reevaluate technical information or perform its own geologic or engineering analysis of that information.

The recommendation to not approve a Plan previously determined to be incomplete and instead determine it to be inadequate signifies that the resubmitted Plan contains significant deficiencies based on one or more of the criteria identified in 23 CCR § 355.4(b), or the GSAs in the basin have not taken sufficient actions to correct the deficiencies previously identified by the Department when it found the Plan incomplete. The Department engages in consultation with the State Water Resources Control Board before finding a Plan inadequate. A Plan determined to be inadequate is subject to the state intervention provisions contained in Chapter 11 of SGMA.²¹

²¹ Water Code § 10735 *et seq.*

3 REQUIRED CONDITIONS

For a Plan that the Department previously determined to be incomplete, the Department provided required corrective actions that address minor or potentially significant deficiencies that the Department identified in the initially submitted Plan. The GSA(s) in a basin, whether developing a single GSP covering the basin or multiple GSPs, must attempt to sufficiently address those required corrective actions within the time provided, not to exceed 180 days, for the Plan to be reevaluated by the Department and potentially approved.

3.1 INCOMPLETE RESUBMITTAL

GSP Regulations specify that the Department shall evaluate a resubmitted GSP in which the GSA has taken corrective actions within 180 days from the date the Department issued an incomplete determination to address deficiencies.²²

The Department issued the incomplete determination on October 26, 2023.²³ The GSA resubmitted the GSP to the Department on April 22, 2024, in compliance with the 180-day deadline.

The GSA has provided a redline/strikeout version of the 2024 revised and resubmitted GSP. The redline/strikeout version highlights the changes made from the initial 2022 submission to the 2024 submission.²⁴

²² 23 CCR § 355.4(a)(4).

²³ <https://sgma.water.ca.gov/portal/service/gspdocument/download/9961>.

²⁴ <https://sgma.water.ca.gov/portal/service/gspdocument/download/10065>.

4 DEFICIENCY EVALUATION

As stated in Section 355.4 of the GSP Regulations, a basin “shall be sustainably managed within 20 years of the applicable statutory deadline consistent with the objectives of the Act.” The Department’s assessment is based on a number of related factors including whether the elements of a GSP were developed in the manner required by the GSP Regulations, whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable, and whether the GSP, through the implementation of clearly defined and technically feasible projects and management actions, is likely to achieve a tenable sustainability goal for the basin.

In its initial incomplete determination, the Department identified deficiencies in the Plan which precluded approval in October 2023.²⁵ The GSA were given 180 days to take corrective actions to remedy the identified deficiencies. Consistent with the GSP Regulations, Department staff are providing an evaluation of the resubmitted Plan to determine if the GSAs have taken sufficient actions to correct the deficiencies identified in the 2022 Plan. For each deficiency, the corrective actions are repeated, the 2022 Plan content is summarized, the 2024 Plan is then described, followed by Department staff’s evaluation.

4.1 DEFICIENCY 1. THE GSP DOES NOT ESTABLISH SUSTAINABLE MANAGEMENT CRITERIA FOR CHRONIC LOWERING OF GROUNDWATER LEVELS IN A MANNER SUBSTANTIALLY COMPLIANT WITH THE GSP REGULATIONS.

4.1.1 Corrective Action 1

The GSA must provide more detailed explanation and justification regarding the selection of the sustainable management criteria for groundwater levels, particularly undesirable results and minimum thresholds, and quantitatively describe the effects of those criteria on the interests of beneficial uses and users of groundwater. Department staff recommend the GSA consider and address the following:

- a. Refine the description of undesirable results to clearly describe the significant and unreasonable conditions the GSA is managing the Subbasin to avoid. This must include a quantitative description of the negative effects to beneficial uses and users that would be experienced at undesirable result conditions.²⁶ The GSA should fully disclose and describe and explain its rationale for determining the number of wells that may be dewatered and the level of impacts to groundwater dependent ecosystems that may occur without rising to significant and unreasonable levels constituting undesirable results. Lastly, the GSA should explain how potential alternate supplies of water or well mitigation will be considered by the GSA during its management of the Subbasin in a project or

²⁵ <https://sgma.water.ca.gov/portal/gsp/assessments/139>.

²⁶ 23 CCR § 354.28(b)(3).

management action as part of the GSP. Department staff also encourage the GSAs to review the Department’s April 2023 guidance document titled *Considerations for Identifying and Addressing Drinking Water Well Impacts*.²⁷

- b. The GSA should revise minimum thresholds to be set at the level where the depletion of supply across the Subbasin may lead to undesirable results²⁸ and provide the criteria used to establish and justify minimum thresholds.²⁹ Fully document the analysis and justifications performed to establish the criteria used to establish minimum thresholds. Clearly show each step of the analysis and provide supporting information used in the analysis.³⁰
- c. Provide an evaluation of how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.³¹ Identify the number and location of wells that may be negatively affected when minimum thresholds are reached. Compare well infrastructure for all well types in the Subbasin with minimum thresholds at nearby, suitably representative monitoring sites. Document all assumptions and steps clearly so that it will be understood by readers of the GSP. Include maps of potentially affected well locations, identify the number of potentially affected wells by well type, and provide a supporting discussion of the effects.

4.1.2 Evaluation of Resubmitted Plan

4.1.2.1 Corrective Action 1a – Undesirable Results

The Department’s Incomplete Determination³² directed the GSA to refine the description of undesirable results to quantitatively describe the significant and unreasonable negative effects to beneficial uses and users that the GSA is managing the Subbasin to avoid. In response, the GSA provided a quantitative description of conditions at undesirable results.

The 2022 GSP did not provide a clear definition of undesirable results. The 2022 GSP had elected to establish a threshold that would allow up to 20 percent of currently functioning domestic wells (up to 240 wells) to go dry without causing an undesirable result. The 2022 GSP qualitatively described the undesirable result as “Chronic lowering of groundwater elevations in the Subbasin cause significant and unreasonable declines if they are sufficient in magnitude to lower the rate of production of pre-existing groundwater wells below that necessary to meet the minimum required to support overlying beneficial use(s) where alternative means of obtaining sufficient water resources are not technically or financially feasible”.³³ The Plan limits the applicability of significant and unreasonable conditions to instances when alternative means of obtaining

²⁷ <https://water.ca.gov/Programs/Groundwater-Management/Drinking-Water-Well>.

²⁸ 23 CCR 354.28(c)(1).

²⁹ 23 CCR 354.28(a).

³⁰ 23 CCR 354.28(b)(1).

³¹ 23 CCR 354.28(b)(4).

³² <https://sgma.water.ca.gov/portal/service/gspdocument/download/9961>.

³³ 2022 Los Molinos GSP, Section 3.3.1.1, p. 300.

sufficient water resources are not technically or financially feasible, but does not indicate what would constitute technical or financial feasibility, or who would make that determination.

The 2024 GSP includes significant revisions to the definition and methodology for determining what would be an undesirable result. The 2024 GSP defines the negative effects to beneficial uses and users that would be experienced at undesirable result conditions as either of two conditions. The first condition is when 10 supply wells become dry within each tessellation hexagon after the GSP revision;³⁴ which was April 22, 2024.³⁵ The second condition is identified to be when water levels at any representative monitoring point decline 7.5 ft or more within a per year over five (5) year period at any RMS.³⁶

The 2024 GSP includes vast improvements in how it defines the specific conditions the GSA is managing the Subbasin to avoid. The 2024 GSP now identifies a clear, quantitative number of wells that may be dewatered at an undesirable condition, whereas the 2022 plan did not. Staff note that the 2024 GSP also now identifies a rate of decline (7.5 feet over 5 years) that would be significant and unreasonable at any representative monitoring site, which is significant in that it provides the sort of specificity required by the GSP Regulations. Staff note that this rate is less than historic declines in four of the nine representative monitoring points. Department staff conclude that avoiding an undesirable result through this refined undesirable result description will show progress in sustainable management. These revisions are sufficient and clearly outline what constitutes an undesirable result in the Subbasin.

Staff note that the GSP does not include a process for the public to report dry wells to the GSA. Because reports of dry wells constitute an undesirable result, this is necessary for the GSA's undesirable result to be reasonable. If the GSA cannot accurately track the number of dry wells, it will not be able to detect an undesirable result. Staff note that the 2024 GSP includes in its suite of potential options that the "GSA may wish to implement as needed"³⁷ the "Tehama County Domestic Well Tracking and Outreach Program" which if implemented, could create a county-wide system to track dry domestic wells,³⁸ but does not provide a start date, nor a set of conditions that would trigger the start of this management action.³⁹ In order for the GSA's definition of an undesirable result, which is based on reported dry wells, to be meaningful, the GSA must provide a public mechanism for the reporting of dry wells and Department staff recommend the GSA describe how it will track dry wells in a clear and transparent manner. The GSA should also describe how the public should report dry wells to the GSA. Lastly, the GSA must provide the reported number of dry wells in its annual reports and evaluations as it is necessary to understand whether an undesirable result is occurring (see [Recommended Corrective Action 1a](#)).

³⁴ 2024 Los Molinos GSP, Section 3.0, p. 290.

³⁵ <https://sgma.water.ca.gov/portal/service/gspdocument/download/10075>.

³⁶ 2024 Los Molinos GSP, Section 3.0, p. 290.

³⁷ 2024 Los Molinos GSP, Table 4-2, p. 368.

³⁸ 2024 Los Molinos GSP, Table 4-2, p. 368, Section 4.5.2.5, pp 416-417.

³⁹ 2024 Los Molinos GSP, Table 4-26, p. 417.

Department staff believe this is sufficient action in response to this portion of the deficiency assuming the GSA provides a clear process for reporting dry wells. The definition of undesirable results for the chronic lowering of groundwater are defined as a significant and unreasonable depletion of supply⁴⁰ and sustainable groundwater management is managing groundwater without causing undesirable results.⁴¹ By identifying a depletion of supply (10 wells per Tessellation Hexagon) and a maximum decline (7.5 feet over five years), the GSA has described both what is significant and unreasonable depletion of supply and what are the significant and unreasonable conditions for the chronic lowering of groundwater levels the GSA is managing to avoid.

While the GSA's revisions related to undesirable results in the 2024 GSP represent a significant improvement, Department staff note there is another issue that needs to be addressed in future updates to the GSP. The GSP Regulations require GSAs to provide the criteria used to define when and where the effects of groundwater conditions cause undesirable results.⁴² The GSP uses 'tessellation hexagons' as part of its definition of undesirable results which are shown on a map.⁴³ However, the GSP does not describe the criteria used to establish the tessellation hexagons, nor describe the relationship between beneficial uses and users and the hexagons, nor does it describe why the varying shapes and sizes of the tessellation hexagons are suitable for defining undesirable results. Not providing any rationale for the GSA's selection of 'tessellation hexagons' is problematic because it does not show the GSA has used this criteria with consideration of where beneficial uses and users are located. Department staff recommend the GSA clearly provide the criteria used and an explanation for why each 'tessellation hexagon' is suitable to support the undesirable result definition with consideration of beneficial uses and users by the periodic evaluation of the GSP (see [Recommended Corrective Action 1b](#)).

The Department's Incomplete Determination also noted the 2022 GSP did not fully disclose, describe, and explain the rationale for determining the number of wells that may be dewatered and the level of impacts to groundwater dependent ecosystems that may occur without rising to significant and unreasonable levels constituting undesirable results. In response, the GSA developed a well mitigation program that appears capable of addressing more wells than the number of dry wells defined as an undesirable result. The GSA explains that it will address every dry well through supplemental supplies and mitigation, which promises to eliminate impacts to well users of groundwater.

The 2024 GSP also states that "the impacts to groundwater dependent ecosystems that may occur without rising to significant and unreasonable levels constituting undesirable results will be evaluated within the next three years of GSP implementation (by January 2027)."⁴⁴ The 2024 GSP promises to identify the impacts to groundwater dependent

⁴⁰ CWC § 10721(x)(1).

⁴¹ CWC § 10721(v).

⁴² 23 CCR § 354.26(b)(2).

⁴³ 2024 Los Molinos GSP, Figure 3-10, p. 317.

⁴⁴ 2024 Los Molinos GSP, Section 3.0, p. 290.

ecosystems prior to the next periodic evaluation. Department staff will track implementation progress in annual reports and periodic evaluations to ensure the GSA is identifying impacts to groundwater dependent ecosystems as indicated in the 2024 GSP.

Department staff conclude that the 2024 GSP has sufficiently explained the GSA's rationale for determining the number of wells that may be dewatered and the level of impacts to groundwater dependent ecosystems.

The Department's Incomplete Determination also directed the GSA that it should explain how potential alternate supplies of water or well mitigation will be considered by the GSA during its management of the Subbasin. The 2022 GSP described a well deepening or replacement program that "would create a program to deepen or replace shallow wells and/or wells that have gone dry in Tehama County."⁴⁵ The well deepening or replacement program was listed in the "Portfolio of Other Potential Projects and Management Actions" that could be implemented as needed.⁴⁶ The 2022 GSP described the timeline for the project as "currently in the early planning stage. Thus, the start and completion dates for this management action have yet to be determined".⁴⁷

The 2024 GSP includes significantly more information about well mitigation efforts than the 2022 GSP. The Plan describes a well mitigation program that "will provide assistance to owners of wells adversely impacted by declining groundwater levels since 2015 that interfere with groundwater production or quality."⁴⁸ The 2024 GSP states that the program will start no later than January 1, 2027.⁴⁹ The 2024 GSP provides a copy of a resolution of the Board of the Tehama County Flood Control and Water Conservation District dated April 15, 2024 to show its commitment to establish the well mitigation program.⁵⁰ The resolution provides an estimate of \$3,000,000 for mitigation measures to cover 150 wells across the Red Bluff, Antelope, and Los Molinos Subbasins.⁵¹

Department staff note that the establishment and commitment by the GSA to implement a well mitigation program sufficiently explains how alternate supplies or mitigation will be considered. The GSA has provided a schedule for implementation, a Board resolution⁵² showing commitment to the program, an estimated budget, and provided a number of wells anticipated to be mitigated, which shows the GSA has considered the program thoroughly. Staff also note that the program is under development, and look forward to seeing details about what processes the GSA may use determine a water use 'non-

⁴⁵ 2022 Los Molinos GSP, Section 4.5.2.7, p. 397.

⁴⁶ 2022 Los Molinos GSP, Section 4.5, p. 373.

⁴⁷ 2022 Los Molinos GSP, Table 4-28, p. 399.

⁴⁸ 2024 Los Molinos GSP, Table 4-2, p. 364.

⁴⁹ 2024 Los Molinos GSP, Section 4.4.6.2.1. p. 391.

⁵⁰ 2024 Los Molinos GSP, Appendix 4-C, pp. 1286-1294.

⁵¹ 2024 Los Molinos GSP, Appendix 4-C, p. 1291.

⁵² The resolutions contain statements that characterize the local agency's understanding of the law and regulations and appear intended to limit GSA liability, which statements have been the focus of public comments. The Department takes no position and offers no comments on those statements, which are not material to determining the adequacy of the Plan in terms of its compliance with SGMA and the GSP Regulations.

essential⁵³ and how the determination of whether impacts are related to groundwater management during the GSP implementation period⁵⁴ will be made. Department staff encourage a robust and public process for any evaluation steps.

4.1.2.2 *Corrective Action 1b – Minimum Thresholds*

The Department's Incomplete Determination directed the GSA that it should revise minimum thresholds to be set at the level where the depletion of supply across the Subbasin may lead to undesirable results⁵⁵ and provide the criteria used to establish and justify minimum thresholds.⁵⁶ In response, the GSA provided updated minimum thresholds and selection criteria.

The 2022 GSP established minimum thresholds “based on these historical and projected data and the GSA’s consideration of undesirable results. The [minimum thresholds] for chronic lowering of groundwater elevations are based on documented screen intervals of key wells located both in the upper and lower aquifers in the Subbasin. The MTs were set to the following: Upper Aquifer: Spring groundwater elevation where less than 10 – 20% (on average) of domestic wells could potentially be impacted. Lower Aquifer: Spring groundwater elevation minus 20 to 120 feet.”⁵⁷ Department staff note that the 2022 GSP did not further explain the criteria, nor provide analysis supporting its claims of ‘less than 10-20%’ of domestic well impacts.

The 2024 GSP includes revised minimum thresholds from the 2022 GSP. The 2024 GSP now establishes minimum thresholds to the 2020-2022 low water levels with a 20-foot operational margin below those levels at representative monitoring wells.⁵⁸ The 2024 revised minimum thresholds were set to benefit beneficial users of shallow and deep wells and the 20-foot operational margin will allow operational flexibility during changes in groundwater elevation.⁵⁹

By revising the minimum threshold to be set at the lowest measurement from 2020 to 2022 with a lower 20-foot operational margin, the GSA is attempting to provide criteria to establish and justify minimum thresholds that represent the level where depletion of supply across the Subbasin may lead to undesirable results. Using a recent historic low measurement as the minimum threshold should limit new dry wells from occurring should the GSA manage the Subbasin to maintain levels above the minimum thresholds, as there is no further lowering of the water table that may impact wells into the future. Department staff believe that the GSA has taken sufficient action to respond to this corrective action.

⁵³ 2024 Los Molinos GSP, Appendix 4-C, p. 1289.

⁵⁴ 2024 Los Molinos GSP, Appendix 4-C, p. 1288.

⁵⁵ 23 CCR § 354.28(c)(1).

⁵⁶ 23 CCR § 354.28(a).

⁵⁷ 2022 Los Molinos GSP, Section 3.3.1.1, p. 300.

⁵⁸ 2022 Los Molinos GSP, Section 3.3.1.1, p. 311.

⁵⁹ 2024 Los Molinos GSP, Section 3.3.1.1, p. 311.

4.1.2.3 *Corrective Action 1c – Interests of Beneficial Uses and Users*

The Department's Incomplete Determination directed the GSA that it should provide an evaluation of how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests, including the number and location of wells that may be negatively affected.⁶⁰ In response, the GSA provided a well impact analysis describing the potential impacts at minimum thresholds.

The 2022 GSP included an inventory of domestic wells, including figures showing the best available information for the location of wells and charts of their depths,⁶⁵ but did not provide a well impact analysis. The 2022 GSP did include a broad, unsubstantiated estimated that "10-20% (on average) of domestic wells could potentially be impacted in the upper aquifer."⁶¹

The 2024 GSP now includes a detailed and thorough well impact analysis.⁶² The analysis includes all well types and all wells regardless of age, and included well records added after the 2022 GSP was written. The number of wells estimated to go dry when water levels reach minimum thresholds were calculated by comparing well depth values modified by hydraulic gradient and topographic gradient estimates compared to minimum threshold values at representative monitoring sites. Wells were associated with representative monitoring sites by comparing well locations and the tessellation hexagon associated with each representative monitoring site.⁶³ Well depths were either the bottom of the perforated interval, if that record was available, or 10 feet higher than the total depth of the well. The results of the analysis indicate that up to 288 of the 1,455 wells may be impacted at minimum thresholds across the Subbasin,⁶⁴ and the 2024 GSP provides a table of the predicted number of dry wells at minimum thresholds.⁶⁵

The 2024 GSP discusses the accuracy of the impact analysis and the GSA's concerns about its accuracy.⁶⁶ The 2024 GSP notes that the well dataset it used includes uncertainty as it includes wells that are destroyed or abandoned, and records that lack information about well construction or have missing location information.⁶⁷ The 2024 GSP notes that a well registration program is scheduled for implementation in 2025 to refine the well dataset.⁶⁸ The analysis includes adjustments to account for changes in topography and groundwater gradient between representative monitoring sites and wells being analyzed, which introduces assumptions and errors, but is likely more accurate than not adjusting analysis for those factors.

⁶⁰ 23 CCR 354.28(b)(4).

⁶¹ 2022 Los Molinos GSP, Section 3.3.1.1, p. 301.

⁶² 2024 Los Molinos GSP, Section 3.3.1.1, p. 312-317.

⁶³ 2024 Los Molinos GSP, Section 3.3.1.1, p.314.

⁶⁴ 2024 Los Molinos GSP, Section 3.3.1.1, p. 314.

⁶⁵ 2024 Los Molinos GSP, Table 3-7, p. 316.

⁶⁶ 2024 Los Molinos GSP, Section 3.3.1.1, p. 312.

⁶⁷ 2024 Los Molinos GSP, Section 3.3.1.1, p. 312.

⁶⁸ 2024 Los Molinos GSP, Section 3.3.1.1, p. 312.

While the number of potential dry wells is substantial, since the GSA has defined an undesirable result as ten wells going dry within approximately ten defined areas of the Subbasin, it appears actual well impacts will be limited to less than one hundred total dry wells in the Subbasin. Further, the GSA has committed to mitigate any dry wells that occur so actual impacts to domestic well owners should theoretically be zero under the proposed management of the Subbasin by the GSA in the 2024 GSP.

The 2024 GSP notes that water levels in deeper wells such as agricultural and municipal wells are generally lower than levels in shallower wells such as domestics, and thus the comparison used may over-represent the impacts to domestic wells when the representative monitoring site is a deeper monitoring well.⁶⁹ The 2024 GSP notes that the uncertainty in predictions in potential dry wells at lower water levels is the reason the GSA will use reported and confirmed dry wells in each Tessellation Hexagon as one of two metrics for undesirable results.⁷⁰ Department staff additionally note that some tessellation hexagons are over 6 miles long,⁷¹ and the analysis may be comparing well depths to a representative monitoring site that is 6 or more miles distant from it, potentially introducing errors as well, indicating that the Subbasin may need additional monitoring to monitor impacts to beneficial uses and users of groundwater. Monitoring networks are evaluated in [Section 5.4](#) of this report.

Department staff conclude that the GSA has sufficiently responded to the request to provide an evaluation of how minimum thresholds may affect the interests of beneficial uses and users of groundwater. The 2024 GSP includes an analysis that provides the number and location of wells that may be negatively affected and provides sufficient description of the analysis undertaken to estimate those impacts. In addition, the 2024 GSP discusses the limitations of this analysis, how the GSA has chosen to define undesirable results in light of these limitations, and promises to update both the analysis and undesirable results as part of the periodic evaluation, providing a thorough and rigorous discussion of beneficial uses and users, minimum thresholds, and undesirable results.

4.1.3 Conclusion

Department staff conclude that the GSA has taken sufficient action to respond to Deficiency 1. The 2024 GSP has provided an updated description of the conditions the GSA is managing the Subbasin to avoid by identifying the number of wells in a tessellation hexagon and rate of decline in water levels that is significant and unreasonable, and providing a mitigation program for the wells that may be impacted before an undesirable result. The 2024 GSP has revised minimum thresholds that are established at a level where the depletion of supply across the Subbasin may lead to undesirable results and has provided an evaluation of how those minimum thresholds may affect the interests of beneficial uses and users of groundwater. Finally, the 2024 GSP has proactively

⁶⁹ 2024 Los Molinos GSP, Section 3.3.1.1, p. 314.

⁷⁰ 2024 Los Molinos GSP, Section 3.3.1.1, p. 314.

⁷¹ 2024 Los Molinos GSP, Figure 3-10, p. 317.

discussed the relationship of the minimum thresholds and the undesirable result definition and is planning to update them as more information becomes available.

5 PLAN EVALUATION

As stated in Section 355.4 of the GSP Regulations, a basin “shall be sustainably managed within 20 years of the applicable statutory deadline consistent with the objectives of the Act.” The Department’s assessment is based on a number of related factors including whether the elements of a GSP were developed in the manner required by the GSP Regulations, whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable, and whether the GSP, through the implementation of clearly defined and technically feasible projects and management actions, is likely to achieve a tenable sustainability goal for the basin.

The Department staff’s evaluation of the likelihood of the Plan to attain the sustainability goal for the Subbasin is provided below. During the evaluation, Department staff consider the information presented in the Plan to understand if the Plan’s contents satisfy the general requirements of the GSP Regulations.

5.1 ADMINISTRATIVE INFORMATION

The GSP Regulations require each Plan to include administrative information identifying the submitting Agency, its decision-making process, and its legal authority;⁷² a description of the Plan area and identification of beneficial uses and users in the Plan area;⁷³ and a description of the ability of the submitting Agency to develop and implement a Plan for that area.⁷⁴

The 2024 GSP describes the GSA, discusses its decision-making process, and provides its legal authority. The GSA was formed by a resolution of the Tehama County Flood Control and Water Conservation District (Tehama County FCWCD), which is a public agency within Tehama County.⁷⁵ The Tehama County FCWCD is governed by a five-member board of directors, which are the same five members as the Tehama County Board of Supervisors, who are elected officials serving 4-year terms.⁷⁶ The board is advised by an 11 member groundwater commission. Meetings of the board and the groundwater commission are open to the public.⁷⁷ The GSA is additionally supported by an AB3030 Technical Advisory Committee which provides technical assistance as needed.⁷⁸ The 2024 GSP provides a timeline of GSA formation,⁷⁹ and includes the GSA formation documents in an appendix.⁸⁰

⁷² 23 CCR § 354.6 *et seq.*

⁷³ 23 CCR § 354.8 *et seq.*

⁷⁴ 23 CCR § 354.6(e).

⁷⁵ 2024 Los Molinos GSP, Section 1.3, p. 51.

⁷⁶ 2024 Los Molinos GSP, Section 1.3.1, p. 52.

⁷⁷ 2024 Los Molinos GSP, Section 1.3.1, p. 52.

⁷⁸ 2024 Los Molinos GSP, Section 1.3.1, p. 53.

⁷⁹ 2024 Los Molinos GSP, Table 1-2, p. 54.

⁸⁰ 2024 Los Molinos GSP, Appendix 1-B, pp. 492-529.

The 2024 GSP provides a description of the plan area. The Los Molinos Subbasin (DWR Subbasin No. 5-021.56) covers 99,400 acres located in the Northern Sacramento Valley Groundwater Basin (Figure 1).

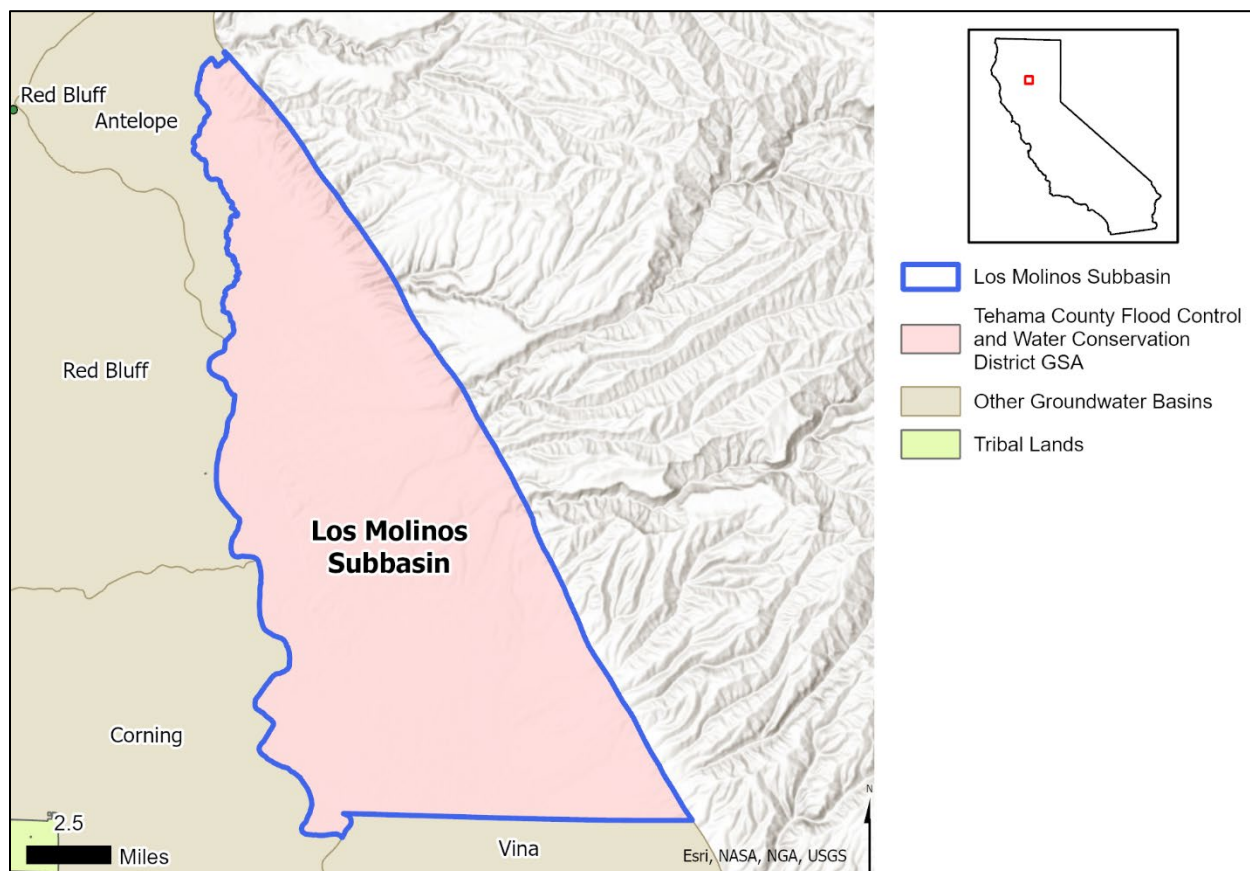


Figure 1: Los Molinos Subbasin Location Map.

The Subbasin is largely undeveloped, with 80% of land use being designated as native and riparian, 18% agriculture, 1% urban use, and 0.2% refuge areas.⁸¹ Agricultural land use in 2019 is designated 6,344 acres of pasture, 889 acres of almonds and pistachios, 9,840 acres of other deciduous, and 1,049 acres designated as other.⁸² The Subbasin includes several disadvantaged communities.⁸³

The 2024 GSP describes the beneficial uses and users in the Subbasin. The Subbasin has 1,546 wells, of which 1,193 are categorized as domestic, 338 are production, and 15 are public supply.⁸⁴ The 2024 GSP includes maps of well density, by each type,⁸⁵ and a

⁸¹ 2024 Los Molinos GSP, Section 2.1.1.2, p. 68.

⁸² 2024 Los Molinos GSP, Table 2-2, p. 73.

⁸³ 2024 Los Molinos GSP, Figure 2-11, p. 90.

⁸⁴ 2024 Los Molinos GSP, Table 2-3, p. 73.

⁸⁵ 2024 Los Molinos GSP, Figures 2-6, 2-7, and 2-8, pp. 74-76.

map of Groundwater Dependent Ecosystems (GDEs).⁸⁶ The 2024 GSP includes a table identifying beneficial uses and users of groundwater and includes groups of general public, land use, urban/commercial and non-commercial agricultural, other commercial and municipal users, environmental and ecosystem, surface water, economic development, human right to water, tribes, and integrated water management categories.⁸⁷

The 2024 GSP states that the GSA will incur costs for administrative tasks including administrative and finance staff, insurance, meetings, reporting, record keeping, bookkeeping, legal advice, outreach, government relations, engineering services, permitting, public outreach, and miscellaneous supplies and materials.⁸⁸ The estimated total cost for administration, monitoring, plan updates, and a ten percent contingency is anticipated to vary annually, and through 2042 is estimated to total \$19,757,00.⁸⁹ The 2024 GSP states that GSP related monitoring and reporting will be funded by local fees, and projects and management actions will be funded by outside grants, cost sharing and other funding sources with anticipated procurement of additional grants and funding sources to assist with GSP implementation.⁹⁰ The information presented in the 2024 GSP related to the GSA's authority and financial plan provides a reasonable level of confidence that the Agency can manage GSP implementation to progress towards the sustainability goal for the Subbasin.

The administrative information section included in the 2024 GSP is substantially compliant with the requirements outlined in the GSP Regulations. Department staff consider the information presented in the Plan to satisfy the general requirements of the GSP Regulations for administrative information.⁹¹

5.2 BASIN SETTING

GSP Regulations require information about the physical setting and characteristics of the basin and current conditions of the basin, including a hydrogeologic conceptual model; a description of historical and current groundwater conditions; and a water budget accounting for total annual volume of groundwater and surface water entering and leaving the basin, including historical, current, and projected water budget conditions.⁹²

5.2.1 Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a non-numerical model of the physical setting, characteristics, and processes that govern groundwater occurrence within a basin, and represents a local agency's understanding of the geology and hydrology of the basin that

⁸⁶ 2024 Los Molinos GSP, Figure 2-64, p. 207.

⁸⁷ 2024 Los Molinos GSP, Table 2-6, pp. 99-101.

⁸⁸ 2024 Los Molinos GSP, Section 5.1.1, p. 444.

⁸⁹ 2024 Los Molinos GSP, Table 5-4, p. 448.

⁹⁰ 2024 Los Molinos GSP, Section 5.1.6, p. 449.

⁹¹ 23 CCR §§ 354.2 *et seq.*

⁹² 23 CCR § 354.12 *et seq.*

support the geologic assumptions used in developing mathematical models, such as those that allow for quantification of the water budget.⁹³ The GSP Regulations require a descriptive hydrogeologic conceptual model that includes a written description of geologic conditions, supported by cross sections and maps,⁹⁴ and includes a description of basin boundaries and the bottom of the basin,⁹⁵ principal aquifers and aquitards,⁹⁶ and data gaps.⁹⁷

The 2024 GSP describes the regional and structural setting of the Los Molinos Subbasin as a basin of sedimentary deposits in the northern Sacramento Valley.⁹⁸ The Subbasin is bounded by Antelope Creek and the Antelope Subbasin to the north, the Sacramento River and Red Bluff and Corning Subbasins to the west, the Chico Monocline to the east, and the Tehama County border and Vina Subbasin to the south.⁹⁹ Structural features in the Subbasin include the Los Molinos Syncline and Chico Monocline, of which the “Los Molinos Syncline may influence the direction of groundwater flow” in the Subbasin.¹⁰⁰

The 2024 GSP provides figures showing the stratigraphic and structural properties, geophysical data, and well details in the Subbasin and adjacent areas in one north-south and five east-west trending cross sections.¹⁰¹ Department staff note that there is limited cross sectional data at the northern area of the Subbasin and the portion of cross section E-E’ transecting the Subbasin does not appear to be supported by boring or well data.¹⁰² Furthermore, there are differing horizontal and vertical scales between cross sections and that the smaller scale used in the Department’s cross sections¹⁰³ is insufficient to depict pertinent stratigraphic and structural features in the Subbasin. Department staff recommend the GSA fill data gaps at the northern portion of the Subbasin to confirm the hydrogeological conceptual model interpretation and use similar scales between cross sections sufficient to depict pertinent stratigraphic and structural features in the Subbasin.

The 2024 GSP identifies two principal aquifers within the Subbasin: an Upper Aquifer and a Lower Aquifer.¹⁰⁴ The 2024 GSP states that this designation is based on an examination of time-series groundwater elevation hydrographs, electric resistivity data from geophysical logs, lithologic logs, well construction details, and review of previous studies

⁹³ DWR Best Management Practices for the Sustainable Management of Groundwater: Hydrogeologic Conceptual Model, December 2016: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-3-Hydrogeologic-Conceptual-Model_ay_19.pdf.

⁹⁴ 23 CCR §§ 354.14 (a), 354.14 (c).

⁹⁵ 23 CCR §§ 354.14 (b)(2-3).

⁹⁶ 23 CCR § 354.14 (b)(4) *et seq.*

⁹⁷ 23 CCR § 354.14 (b)(5).

⁹⁸ 2024 Los Molinos GSP, Sections 2.2.1.3 and 2.2.1.3.1, pp. 128-131.

⁹⁹ 2024 Los Molinos GSP, Section 2.2.1.1, p. 124.

¹⁰⁰ 2024 Los Molinos GSP, Section 2.2.1.3.3, p. 151.

¹⁰¹ 2024 Los Molinos GSP, Section 2.2.1.3.2, p. 134; Figures 2-21 through 2-27, pp. 138-145.

¹⁰² 2024 Los Molinos GSP, Figure 2-23, p. 141.

¹⁰³ 2024 Los Molinos GSP, Figures 2-26 and 2-27, pp. 144-145.

¹⁰⁴ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

in the Subbasin.¹⁰⁵ The Plan also states the “complexity of the geologic materials and among the and formations makes it difficult to define a singular widespread aquitard or distinctive change in geologic materials separating an upper and lower aquifer”, and that highly variable groundwater conditions occur throughout the Subbasin as a result of the complex depositional environment.¹⁰⁶ The 2024 GSP notes that there is a large degree of heterogeneity in the Tehama and Tuscan Formations that are currently not well defined and create both confined and unconfined groundwater conditions.¹⁰⁷ The 2024 GSP states that well construction data were used “to delineate between areas with a higher likelihood of confined conditions.”¹⁰⁸ Most wells in the Subbasin are screened shallower than 400 feet below ground surface (bgs) which closely correlates to the bottom of the numerical groundwater model layer 5, and the 2024 GSP uses the bottom of model layer 5 as the boundary between the Upper and Lower Aquifer.¹⁰⁹

The 2024 GSP describes the Upper Aquifer’s water-bearing formations as the Quaternary formations in the upper portions of the Tehama and Tuscan Formations with an estimated storage capacity of 400,000 acre-feet.¹¹⁰ The Upper Aquifer is described as having both unconfined and semiconfined groundwater conditions extending to depths ranging from 350 to 450 feet bgs and is primarily used for agricultural and domestic purposes.¹¹¹ The 2024 GSP reports “site specific aquifer properties” based on aquifer tests conducted in the Deer Creek area of the Subbasin and surrounding Subbasins.¹¹² Transmissivity estimates are provided in the 2024 GSP for the upper Tuscan Formation based on data from a single well cross screened well between the Upper and Lower Aquifers, and hydraulic conductivity estimates are provided for the Tehama Formation based on data from the neighboring Red Bluff Subbasin.¹¹³

The 2024 GSP defines the Lower Aquifer as the lower portions of the Tehama and Tuscan Formations with confined to semi-confined conditions and note a lack of certainty in definition of the top of the Lower Aquifer due to the absence of a continuous confining layer.¹¹⁴ The 2024 GSP states that wells screened in the Lower Aquifer are predominately used for non-domestic purposes.¹¹⁵ Similar to the Upper Aquifer, aquifer properties (i.e. transmissivity and hydraulic conductivity) for the Lower Aquifer are based on aquifer tests conducted in the Deer Creek area of the Subbasin and using data from the adjacent Red Bluff Subbasin.

¹⁰⁵ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹⁰⁶ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹⁰⁷ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹⁰⁸ 2024 Los Molinos GSP, Section 2.2.1.5, p. 164.

¹⁰⁹ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹¹⁰ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹¹¹ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹¹² 2024 Los Molinos GSP, Section 2.2.1.5, pp. 162-163.

¹¹³ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

¹¹⁴ 2024 Los Molinos GSP, Section 2.2.1.5, p. 163.

¹¹⁵ 2024 Los Molinos GSP, Section 2.2.1.5, p. 163.

Department staff conclude that since aquifer testing was performed in a well cross screened between aquifers in the Subbasin, aquifer properties referenced in the 2024 Plan are not exclusively representative of either the Upper or Lower Aquifers, nor in some cases, do they directly apply to the Subbasin. Department staff are concerned that the principal aquifers identified in the 2024 GSP are not representative of physical conditions in the Subbasin. It is not clear in the 2024 GSP how well construction data relates to the differentiation of confined and unconfined groundwater conditions or the distinction of two aquifers. The presence of confined and unconfined groundwater conditions is not well-defined due to data gaps with respect to Subbasin stratigraphy and hydrogeologic properties (see data gap discussion below). The cross-sections depict the boundary between the Upper and Lower Aquifers, but the boundary is not correlated with geologic formations or with the stratigraphy in lithologic logs.¹¹⁶ Department staff note that adjacent GSPs within the Sacramento Valley (specifically Corning and Vina) identify a single principal aquifer. Department staff recommend that the GSA provide additional rationale to support the presence of two distinct principal aquifers, if they are present, or identify one principal aquifer (see [Recommended Corrective Action 2a](#)).

The 2024 GSP defines the bottom of the Subbasin as the base of the post-Eocene continental deposits where the transition of marine-derived sediments and terrestrial-derived sediments corresponds from saline/brackish groundwater to fresh groundwater. The 2024 GSP establishes the base of fresh water in the Subbasin by evaluation of geophysical and water quality data and defines the base of fresh water shallower than 1,200 mean sea level at the east and southeast portions of the Subbasin and deeper than -2,000 feet mean sea level at the western portion of the Subbasin.¹¹⁷ The 2024 GSP provides base to freshwater and base to post-Eocene contour maps to support this assessment.¹¹⁸

The 2024 GSP identifies data gaps and uncertainty in the hydrogeologic conceptual model. First, it states that specific thicknesses and lateral extent of formations in the Subbasin are poorly understood, particularly in delineating the western extent of the Tuscan Formation where probable interfingering exists between the Tuscan and Tehama Formations.¹¹⁹ Secondly, the 2024 GSP acknowledges that aquifer properties often vary considerably within geologic formations and very limited hydrogeologic data are available within the Subbasin.¹²⁰ The 2024 GSP also discusses the lack of shallow wells near active stream gages, and note the need for additional monitoring wells proximal to new stream gages for monitoring recharge related to surface water–shallow groundwater interaction.¹²¹ GSP Regulations require GSAs to identify the steps that will be taken to fill data gaps prior to the next periodic evaluation.¹²² Department staff recommend the GSA

¹¹⁶ 2024 Los Molinos GSP, Figures 2-21 - 2-27, pp. 138-145.

¹¹⁷ 2024 Los Molinos GSP, Section 2.2.1.6, p. 163.

¹¹⁸ 2024 Los Molinos GSP, Figures 2-15 and 2-16, pp. 126-127.

¹¹⁹ 2024 Los Molinos GSP, Section 2.2.1.8, p. 168.

¹²⁰ 2024 Los Molinos GSP, Section 2.2.1.8, p. 168

¹²¹ 2024 Los Molinos GSP, Section 2.2.1.8, p. 168.

¹²² 23 CCR § 354.38 (d).

propose a project or management action with a schedule for implementation to address the hydrogeologic conceptual model’s data gaps, especially to further characterize aquifer properties and interconnectivity between principal aquifers in the Subbasin (see [Recommended Corrective Action 2b](#)).

The hydrogeologic conceptual model section included in the 2024 GSP will be considered substantially compliant with the requirements outlined in the GSP Regulations,¹²³ if the GSA responds sufficiently to recommended corrective actions for this section.

5.2.2 Groundwater Conditions

The GSP Regulations require a written description of historical and current groundwater conditions for each of the applicable sustainability indicators and groundwater dependent ecosystems that includes the following: groundwater elevation contour maps and hydrographs,¹²⁴ a graph depicting change in groundwater storage,¹²⁵ maps and cross-sections of the seawater intrusion front,¹²⁶ maps of groundwater contamination sites and plumes,¹²⁷ maps depicting total subsidence,¹²⁸ identification of interconnected surface water systems and an estimate of the quantity and timing of depletions of those systems,¹²⁹ and identification of groundwater dependent ecosystems.¹³⁰

The 2024 GSP provides groundwater elevation contour maps representing seasonal high and low conditions in the Upper and Lower Aquifers for the years 2013, 2015, 2017 and 2019.¹³¹ Wells screened in shallow zones (upper 50 feet below ground surface) and cross screened between aquifers are determined to not be representative of aquifer specific conditions and are excluded from contour maps. Groundwater contour maps indicate a westerly to southwesterly flow direction in the Upper and Lower Aquifers. The 2024 GSP provides estimates of horizontal and vertical hydraulic gradients in the Subbasin based on the limited hydrologic data currently available for the Subbasin.¹³² Department staff note that there is a poor spatial distribution or lack of wells in several areas of the Subbasin which limit the ability to evaluate groundwater conditions and confidently calculate hydraulic gradients representative of the entire Subbasin, especially due to the complexity and heterogeneity of geologic materials with variable hydrologic properties noted by the GSA.¹³³

The groundwater conditions section of the 2024 GSP includes four hydrographs depicting long-term groundwater trends in the Upper and Lower Aquifers (including one well

¹²³ 23 CCR § 354.14 *et seq.*

¹²⁴ 23 CCR §§ 354.16 (a)(1-2).

¹²⁵ 23 CCR § 354.16 (b).

¹²⁶ 23 CCR § 354.16 (c).

¹²⁷ 23 CCR § 354.16 (d).

¹²⁸ 23 CCR § 354.16 (e).

¹²⁹ 23 CCR § 354.16 (f).

¹³⁰ 23 CCR § 354.16 (g).

¹³¹ 2024 Los Molinos GSP, Figures 2-39 – 2-46, pp. 175-182; Figures 2-47 – 2-54, pp. 184-191.

¹³² 2024 Los Molinos GSP, Section 2.2.2.1.2, p. 183.

¹³³ 2024 Los Molinos GSP, Section 2.2.1.5, p. 162.

monitoring an unidentified aquifer due to lack of screen data) for periods of record starting as early as 1980 to 2000.¹³⁴ Additional groundwater hydrographs for wells used to evaluate long-term groundwater trends in the Subbasin from dates as early as the mid-1950s in some wells and extending through 2020 are included in the appendices of the 2024 GSP.¹³⁵ Department staff note that the analysis hydrographs generally indicate decreasing groundwater trends in the Subbasin with some seasonable fluctuation and recharge following drought periods.¹³⁶ The 2024 Plan attributes the decreasing trend in groundwater levels in the Subbasin to increasing groundwater withdrawal from groundwater pumping in the Subbasin.¹³⁷

The 2024 Plan presents a statistical analysis of groundwater trends in the Subbasin which indicate that “the slightly decreasing trend in groundwater levels is not an indication of overdraft, but is likely due to removal of temporary surplus of groundwater,” and state that the temporary surplus removal is unlikely to impact “beneficial users of groundwater to an unreasonable degree.”¹³⁸ Department staff note that this analysis included eight wells in the Subbasin of which seven wells were identified to monitor aquifer-specific conditions; however, the spatial distribution of wells is poor thus excluding evaluation of groundwater conditions in several areas of the Subbasin.¹³⁹ This limited data set likely limits the accuracy of this analysis, therefore, the conclusions may not be representative of conditions throughout the entire Subbasin, and the 2024 Plan does not explain how results from this analysis support the GSA’s conclusion that current groundwater decline is unlikely to impact beneficial users. Impacts to beneficial uses and users from groundwater decline are addressed above in [Section 4.1.2.3](#) of this report in response to the Department’s Incomplete Determination of the 2022 GSP.

The 2024 GSP presents the annual and cumulative changes in groundwater in storage averaged over a 29-year historical study period from WY 1990 to 2018.¹⁴⁰ The changes in storage for the Subbasin are estimated using the GSAs Tehama Integrated Hydrologic Model (Tehama IHM).¹⁴¹ The 2024 Plan describes that the change in storage during the historical study period equates to an annual depletion of groundwater of about -2,500 acre-feet per year, and a cumulative depletion of approximately -74,000 acre-feet.¹⁴² The 2024 Plan includes graphical representation of the modeled change of groundwater in storage for the historical period including groundwater use, water year type, annual change in storage, and cumulative change in storage.¹⁴³

¹³⁴ 2024 Los Molinos GSP, Figure 2-37, p. 170.

¹³⁵ 2024 Los Molinos GSP, Appendix 2F, pp. 761-795.

¹³⁶ 2024 Los Molinos GSP, Figure 2-37, p. 170; Appendix 2F, pp. 761-795.

¹³⁷ 2024 Los Molinos GSP, Section 2.2.2.1.1, p. 173.

¹³⁸ 2024 Los Molinos GSP, Section 2.2.2.1.1, p. 173.

¹³⁹ 2024 Los Molinos GSP, Appendix 2-F pp. 763 -764.

¹⁴⁰ 2024 Los Molinos GSP, Section 2.3.2.1, p. 225.

¹⁴¹ 2024 Los Molinos GSP, Section 2.3, p. 220.

¹⁴² 2024 Los Molinos GSP, Section 2.3.5.3, p. 248.

¹⁴³ 2024 Los Molinos GSP, Figure 2-73, p. 250.

The change in groundwater storage was also estimated for the Subbasin, but Department staff note that the estimate appears to underestimate the decrease in storage due to a lack of suitable groundwater elevation monitoring. Department staff note that the change in storage calculation provided in the 2024 GSP is calculated for a western portion (25% of the Subbasin area) of the Upper Aquifer.¹⁴⁴ The 2024 GSP evaluated the change in groundwater elevation between the years 1990 to 2018. During this period, the change in groundwater elevation was estimated to increase up to five feet near the Sacramento River despite not indicating a monitoring point to support that increase, while elevations in the east, particularly near Deer Creek, decreased by up to eight feet, which corresponds to an overall decrease of approximately -1,400 acre-feet of groundwater storage in the western portion of the Upper Aquifer.¹⁴⁵ Department staff note that the change in groundwater storage in this study is based on limited groundwater data, only applies to a limited area of the Upper Aquifer, and is not representative of overall Upper Aquifer conditions in the Subbasin during this period.

The 2024 GSP states that the Subbasin is located far from the Pacific Ocean and seawater intrusion is not an applicable sustainability indicator for the Subbasin.¹⁴⁶ Given the geographic setting of the Subbasin, Department staff regard the reasoning of the 2024 GSP as sufficient to demonstrate that sea water intrusion is not present in the Subbasin and not likely to occur in the future.

The 2024 GSP includes a description of current and historical groundwater quality in the Subbasin based on review of available literature and groundwater quality databases.¹⁴⁷ The 2024 GSP states that “widespread presence of contaminants at undesirable levels is not a groundwater quality concern in the Subbasin at present”.¹⁴⁸ The 2024 GSP’s discussion of groundwater quality focuses on four groundwater constituents including dissolved solids (TDS), nitrate, arsenic, and coliform bacteria.¹⁴⁹ The 2024 GSP provides discussions and concentration maps for total dissolved solids (TDS), nitrate, and arsenic.¹⁵⁰ The 2024 GSP explains that few to no groundwater samples collected during the study period (1956 or 1959 to current) exceeded the respective Maximum Contaminant Level for TDS and nitrate and concluded that the occurrence of TDS and nitrate “at undesirable concentrations” is not currently a groundwater quality concern in the Subbasin. The 2024 Plan states that arsenic is “a groundwater quality concern in some areas in the Subbasin” based on exceedances of the Maximum Contaminant Level at least once in 26% of wells tested in the Subbasin since 1959 with elevated arsenic concentrations predominantly reported in wells in the vicinity of the town of Los Molinos.¹⁵¹ The 2024 GSP notes that there is insufficient data to characterize the

¹⁴⁴ 2024 Los Molinos GSP, Figure 2-55, p. 193.

¹⁴⁵ 2024 Los Molinos GSP, Section 2.2.2.2, p. 192

¹⁴⁶ 2024 Los Molinos GSP, Section 2.2.2.4, p. 198.

¹⁴⁷ 2004 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁴⁸ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁴⁹ 2004 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁵⁰ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194; Figures 2-56 – 2-58, pp. 195-197.

¹⁵¹ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

occurrence of arsenic at depth in the Subbasin and acknowledge that arsenic is a naturally occurring element associated with volcanic deposits of the Tuscan Formation.¹⁵² Although the 2024 GSP states that a discussion is provided for each of the four groundwater constituents identified in the Subbasin¹⁵³ a discussion is not provided for coliform bacteria. Since coliform bacteria was identified by the GSA as one of the four groundwater constituents to evaluate groundwater quality in the Subbasin,¹⁵⁴ Department staff recommend that a discussion of the distribution and trends in coliform bacteria in the Subbasin be provided in the next periodic evaluation. The 2024 Plan states that currently all point-source contamination sites are closed or inactive in the Subbasin.¹⁵⁵

The 2024 GSP includes a discussion of current and historical land subsidence in the Subbasin and states that the Subbasin “has little to no reported evidence of subsidence”.¹⁵⁶ The 2024 GSP references three subsidence surveys conducted by the Department and the University NAVSTAR Consortium (UNAVCO) between 2003 and 2019.¹⁵⁷ On average, changes in ground surface elevation during these surveys ranged from a rise of 0.002 feet per year to subsidence of -0.01 feet per year during study periods of 2008 to 2017 and 2015 to 2019, respectively.¹⁵⁸ The 2024 Plan includes maps of land subsidence from these surveys that cover the extent, cumulative total, and annual rate of subsidence in the Subbasin.¹⁵⁹ The 2024 GSP states that the minimal subsidence measured in the Subbasin is likely elastic, however there is no supporting information in the 2024 GSP to substantiate this claim. Department staff recommend the GSA’s provide justification why measurable subsidence measured in the Subbasin is likely elastic in annual reports and periodic evaluations for the Subbasin.

The 2024 GSP states that the “Subbasin does not contain active stream gages near shallow monitoring needed to accurately define interconnectivity of surface water and groundwater.”¹⁶⁰ The lack of data from collocated shallow monitoring wells and active stream gages is identified as a data gap for interconnected surface water in the Subbasin.¹⁶¹ Furthermore, other than categorizing losing and gaining stream segments, no modeling attempts were made to estimate the depletion of interconnected surface water from groundwater decline in the Subbasin.¹⁶² Data gaps for interconnected surface water are further discussed in [Section 5.3.2.6](#) and [Section 5.4](#) of this report.

¹⁵² 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁵³ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁵⁴ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁵⁵ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

¹⁵⁶ 2024 Los Molinos GSP, Section 2.2.2.5, p. 198.

¹⁵⁷ 2024 Los Molinos GSP, Section 2.2.2.5, p. 198.

¹⁵⁸ 2024 Los Molinos GSP, Section 2.2.2.5, p. 198.

¹⁵⁹ 2024 Los Molinos GSP, Section 2.2.2.5, p. 198; Figures 2-60 – 2-62, pp. 200-202.

¹⁶⁰ 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205.

¹⁶¹ 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205.

¹⁶² 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205.

The 2024 GSP includes a description of groundwater Dependent ecosystems (GDEs) in the Subbasin along with a map.¹⁶³ The 2024 GSP identifies GDEs and freshwater species by using the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset from the Department, the California Freshwater Species Database from CDFW, and the Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act – Guidance for Preparing Groundwater Sustainability Plans by The Nature Conservancy.¹⁶⁴ Currently, the 2024 GSP identifies 36 acres of high priority GDEs in the Subbasin.¹⁶⁵ The 2024 Plan states that installation of shallow groundwater monitoring wells near or within these groundwater dependent ecosystems is needed to confirm whether these areas are groundwater dependent ecosystems.¹⁶⁶ Data gaps for GDEs are further discussed in [Section 5.4](#) of this report. Department staff note the 2024 GSP does not provide a map of potential GDEs that was refined into the high priority GDE list. Department staff recommend the GSA show its work completely in explaining how it reduced the extent of GDEs from the initial set to the high priority set, including graphs and maps if necessary.

The groundwater conditions section included in the GSP will be considered substantially compliant with the requirements outlined in the GSP Regulations,¹⁶⁷ if the GSA responds sufficiently to the recommended corrective actions for this section.

5.2.3 Water Budget

GSP Regulations require a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical; current; and projected water budget conditions,¹⁶⁸ and the sustainable yield.¹⁶⁹

The Tehama IHM numerical groundwater model was used to develop water budgets for the Subbasin in the 2024 GSP.¹⁷⁰ The Tehama IHM was calibrated for the period of 1990 to 2019 and uses foundational elements from the Department’s Sacramento Valley Groundwater-Surface Water Simulation Model (SVSim) regional model for the Sacramento Valley with local refinements.¹⁷¹ The GSP provides estimated water budgets for a 29 year historical period (1990-2018), five current periods (from which 2016-2018 was chosen as the most representative current period) and a fifty year projected water budget (years 2022 to 2072) with consideration of data from a fifty year historical period from 1968 to 2018.¹⁷² Graphical representation of the change in groundwater storage

¹⁶³ 2024 Los Molinos GSP, Figure 2-64, p. 207.

¹⁶⁴ 2024 Los Molinos GSP, Section 2.2.2.7, pp. 205-207.

¹⁶⁵ 2024 Los Molinos GSP, Section 2.2.2.7, p. 206.

¹⁶⁶ 2024 Los Molinos GSP, Section 2.2.2.7, p. 207.

¹⁶⁷ 23 CCR § 354.16 *et seq.*

¹⁶⁸ 23 CCR §§ 354.18 (a), 354.18 (c) *et seq.*

¹⁶⁹ 23 CCR § 354.18 (b)(7).

¹⁷⁰ 2024 Los Molinos GSP, Section 2.3, p. 220.

¹⁷¹ 2024 Los Molinos GSP, Section 2.3, pp. 220-221.

¹⁷² 2024 Los Molinos GSP, Sections 2.3.2.1 and 2.3.2.2, pp. 225-226.

during the historical and projected period is provided in the 2024 GSP.¹⁷³ The 2024 GSP states that overdraft is not occurring in the Subbasin and the decrease in groundwater elevation occurring the Subbasin is “likely due to removal of temporary surplus of groundwater”.¹⁷⁴ Department staff note that a general groundwater decline is occurring in the Subbasin as shown in trends of hydrographs depicting long-term trends in groundwater elevation in the Subbasin,¹⁷⁵ and note that SGMA requires GSAs to manage groundwater levels sustainably. Staff encourage the GSA to actively manage the Subbasin during implementation to arrest declining groundwater levels.

The historical water budget in the 2024 GSP indicates a total loss of cumulative groundwater storage during the historical period (1990-2018) of -74,000 acre-feet, or about -2,500 acre-feet per year.¹⁷⁶ The most notable decline in historical groundwater storage occurred during the drought period of 2013 to 2015, with some subsequent recharge, but Department staff note that groundwater storage recharge in the Subbasin has not rebounded back to historical groundwater storage volumes.¹⁷⁷

To demonstrate the variability of groundwater storage between water years during the current period, the current water budget was evaluated for five different periods including the most recent 3 years (2016-2018), 5 years (2014-2018) and 10 years (2009-2018) and single years 2018 and 2019.¹⁷⁸ Current water budgets ranged from an annual loss of -38,000 acre-feet per year (2018) to an increase of 47,000 acre-feet per year (2019), with an increase in groundwater storage of 19,000 acre-feet per year for the chosen current water budget period of 2016-2018.¹⁷⁹

The 2024 GSP presents the projected water budget considering current and future land use conditions with and without predicted climate change conditions for a 50-year period (2022-2072). The projected water budget without consideration of predicted climate change is a loss in groundwater storage of about -2,000 acre-feet per year and cumulative loss in groundwater storage of about -100,000 acre-feet per across the Subbasin.¹⁸⁰ With consideration of predicted climate change conditions, the annual loss in groundwater for the predicted water budget increases to approximately -2,300 acre feet per year with the majority of loss in groundwater storage occurring in the Upper Aquifer.¹⁸¹

The sustainable yield is estimated in the 2024 GSP at 28,000 acre-feet per year. The 2024 Plan assumes a potential 25 percent uncertainty with estimated water budget estimates for the Subbasin and note that the true sustainable yield may be higher.¹⁸²

¹⁷³ 2024 Los Molinos GSP, Figures 2-75, 2-76 and 2-81, pp. 250, 262 and 274.

¹⁷⁴ 2024 Los Molinos GSP, Section 2.3.5.3. p. 248.

¹⁷⁵ 2024 Los Molinos GSP, Appendix 2-F, pp. 765-795.

¹⁷⁶ 2024 Los Molinos GSP, Section 2.3.5.3, p. 248; Table 2-21, p. 251.

¹⁷⁷ 2024 Los Molinos GSP, Figure 2-73, p. 250.

¹⁷⁸ 2024 Los Molinos GSP, Section 2.3.6, p. 252.

¹⁷⁹ 2024 Los Molinos GSP, Table 2-32, p. 254.

¹⁸⁰ 2024 Los Molinos GSP, Section 2.3.8.2, p. 272; Table 2-29, p. 276.

¹⁸¹ 2024 Los Molinos GSP, Table 2-31, p. 277; Section 3.2.10, p. 278.

¹⁸² 2024 Los Molinos GSP, Section 3.2.12, p. 284.

Department staff conclude that the historical, current, and projected water budgets included in the 2024 GSP substantially comply with the requirements outlined in the GSP Regulations.

5.2.4 Management Areas

The GSP Regulations provide the option for one or more management areas to be defined within a basin if the GSA has determined that the creation of the management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives, provided that undesirable results are defined consistently throughout the basin.¹⁸³

The 2024 GSP does not use management areas.

5.3 SUSTAINABLE MANAGEMENT CRITERIA

GSP Regulations require each Plan to include a sustainability goal for the basin and to characterize and establish undesirable results, minimum thresholds, and measurable objectives for each applicable sustainability indicator, as appropriate. The GSP Regulations require each Plan to define conditions that constitute sustainable groundwater management for the basin including the process by which the GSA characterizes undesirable results and establishes minimum thresholds and measurable objectives for each applicable sustainability indicator.¹⁸⁴

5.3.1 Sustainability Goal

GSP Regulations require that GSAs establish a sustainability goal for the basin. The sustainability goal should be based on information provided in the GSP's basin setting and should include an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation.¹⁸⁵

The sustainability goal for the Los Molinos Subbasin is “to develop PMAs that result in the sustainable management of the groundwater resources of the Subbasin for long-term community, financial, and environmental benefits of residents and businesses in the Subbasin,” and “to ensure that by 2042, and thereafter within the planning and implementation horizon of this GSP (50 years to 2072), the Subbasin is operated within its sustainable yield and does not exhibit undesirable results considered significant and unreasonable.”¹⁸⁶

The 2024 GSP summarizes its plans to manage groundwater to reach the sustainability goal within 20 years, and states: “To ensure the Subbasin meets its sustainability goal by 2042, the GSA proposed several [projects and management actions] PMAs, described in Chapter 4, to address any undesirable results that may occur. The overarching

¹⁸³ 23 CCR § 354.20.

¹⁸⁴ 23 CCR § 354.22 *et seq.*

¹⁸⁵ 23 CCR § 354.24.

¹⁸⁶ 2024 Los Molinos GSP, Section 3.1.1, p. 295.

sustainability goal, as well as the absence of undesirable results, are expected to be achieved by 2042 through the implementation of the [projects and management actions] PMAs. The sustainability goal will be maintained through proactive monitoring and management by the GSA as described in this GSP¹⁸⁷. The 2024 GSP identifies projects and management actions discussed in [Section 5.5](#) below to achieve the Subbasin's sustainability goal by 2042.

Department staff conclude that the sustainability goal section included in the 2024 GSP is substantially compliant with the requirements outlined in the GSP Regulations.¹⁸⁸

5.3.2 Sustainability Indicators

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results.¹⁸⁹ Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon, significant and unreasonable reduction of groundwater storage, significant and unreasonable seawater intrusion, significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water¹⁹⁰ – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather, sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

GSP Regulations require that GSAs provide descriptions of undesirable results including defining what are significant and unreasonable potential effects to beneficial uses and users for each sustainability indicator.¹⁹¹ GSP Regulations also require GSPs provide the criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the Subbasin.¹⁹²

GSP Regulations require that the description of minimum thresholds include the information and criteria relied upon to establish and justify the minimum threshold for each sustainability indicator.¹⁹³ GSAs are required to describe how conditions at minimum

¹⁸⁷ 2024 Los Molinos GSP, Section 3.1.3, p. 296.

¹⁸⁸ 23 CCR § 354.24.

¹⁸⁹ 23 CCR § 351(ah).

¹⁹⁰ Water Code § 10721(x).

¹⁹¹ 23 CCR §§ 354.26 (a), 354.26 (b)(c).

¹⁹² 23 CCR § 354.26 (b)(2).

¹⁹³ 23 CCR § 354.28 (b)(1).

thresholds may affect beneficial uses and users,¹⁹⁴ and the relationship between the minimum thresholds for each sustainability indicator, including an explanation for how the GSA has determined conditions at each minimum threshold will avoid causing undesirable results for other sustainability indicators.¹⁹⁵

GSP Regulations require that GSPs include a description of the criteria used to select measurable objectives, including interim milestones, to achieve the sustainability goal within 20 years.¹⁹⁶ GSP Regulations also require that the measurable objectives be established based on the same metrics and monitoring sites as those used to define minimum thresholds.¹⁹⁷

The following subsections thus consolidate three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information, as presented in the Plan, pertaining to the processes and criteria relied upon to define undesirable results applicable to the Subbasin, as quantified through the establishment of minimum thresholds, are addressed for each applicable sustainability indicator. A submitting agency is not required to establish criteria for undesirable results that the agency can demonstrate are not present and are not likely to occur in a basin.¹⁹⁸

5.3.2.1 Chronic Lowering of Groundwater Levels

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the chronic lowering of groundwater, the GSP Regulations require the minimum threshold for chronic lowering of groundwater levels to be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results that is supported by information about groundwater elevation conditions and potential effects on other sustainability indicators.¹⁹⁹

The 2024 GSP includes many revisions related to the sustainable management criteria for the chronic lowering of groundwater levels in response to Deficiency 1 identified with the 2022 GSP. For more information related to undesirable results, minimum thresholds, and impacts to beneficial uses and users please refer to the discussion in [Section 4.1](#).

The 2024 GSP describes the information and criteria relied upon to establish and justify the measurable objectives for the chronic lowering of groundwater levels. The 2024 GSP states: “To determine MOs, historical water elevations and projected water level trends were analyzed. The Subbasin aims to become sustainable by 2042 and therefore, MOs were set to spring 2042 projected elevations minus five (5) feet for wells with a decreasing projected trend and at spring 2015 water levels minus five (5) feet for wells with an increasing projected trend in water elevations or with no trend.”²⁰⁰ The 2024 GSP

¹⁹⁴ 23 CCR § 354.28(b)(4).

¹⁹⁵ 23 CCR § 354.28(b)(2).

¹⁹⁶ 23 CCR § 354.30(a).

¹⁹⁷ 23 CCR § 354.30(b).

¹⁹⁸ 23 CCR § 354.26(d).

¹⁹⁹ 23 CCR § 354.28(c)(1) *et seq.*

²⁰⁰ 2024 Los Molinos GSP, Section 3.2.1.1, p. 298.

provides tables of measurable objective values, and includes hydrographs showing measurable objectives in Appendix 3-B.²⁰¹ Department staff note that measurable objectives were not established for wells LM-6U and TSS-5 in the Upper Aquifer and wells LM-9L and TSS-5 for the Lower Aquifer due to pending well installation and insufficient data.²⁰² Department staff recommend that measurable objective values be developed for these wells by the next periodic evaluation and this information should be provided in annual reports and periodic evaluations for the Subbasin.

Department staff note that the description of the criteria used to establish measurable objectives is inconsistent in the sustainable management criteria section in the 2024 GSP. It appears that the GSA has not updated all sections in the revised plan to reflect the new approach to establish measurable objectives in the 2024 GSP, and language that was deemed insufficient in the 2022 GSP remains. Specifically, Department staff note inconsistencies describing the approach to establish measurable objectives between Sections 3.0 and 3.2.1.1 in the 2024 GSP, and the tables and hydrographs indicate the same measurable objective values, which are set at levels inconsistent with the revised description to establish measurable objectives in the 2024 GSP. Department staff recommend the GSA update all relevant sections, tables and figures to reflect the revised approach to determine measurable objectives consistent with the revised sections in Section 3.0 in the 2024 GSP as part of the next periodic evaluation for the Subbasin.

The 2024 GSP describes its interim milestones, including the criteria for their selection which is “the difference between the MOs and the starting point equally distributed over four interim milestones.”²⁰³ The 2024 Plan explains that spring 2021 groundwater levels were used to initiate interim milestones in the majority of representative monitoring sites except for well LM-1 where interim milestone groundwater levels start from 2020 groundwater levels.²⁰⁴ The 2024 GSP provides a table of interim milestones.²⁰⁵ Department staff note that similar to measurable objectives, interim milestones were not developed for wells for wells LM-6U and TSS-5 in the Upper Aquifer and wells LM-9L and TSS-5 for the Lower Aquifer which should be developed as part of the next periodic evaluation.

The sustainable management criteria for the chronic lowering of groundwater levels section included in the 2024 GSP will be considered substantially compliant with the requirements outlined in the GSP Regulations once the GSA has responded to recommended corrective actions listed in [Section 4.1](#).

5.3.2.2 Reduction of Groundwater Storage

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the reduction of groundwater storage, the GSP Regulations require the minimum threshold for the

²⁰¹ 2024 Los Molinos GSP, Tables 3-2 and 3-3, p. 301; Appendix 3-B, pp. 1203-1212.

²⁰² 2024 Los Molinos GSP, Tables 3-2 and 3-3, p. 301.

²⁰³ 2024 Los Molinos GSP, Section 3.2.1.2, p. 301.

²⁰⁴ 2024 Los Molinos GSP, Section 3.2.1.2, p. 301.

²⁰⁵ 2024 Los Molinos GSP, Tables 3-2 and 3-3, p. 301.

reduction of groundwater storage to be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the subbasin.²⁰⁶

The 2024 GSP identifies that the undesirable results for groundwater storage would occur when 25% of groundwater elevations measured at same RMS wells exceed the associated MTs for two consecutive fall measurements.²⁰⁷ The 2024 GSP describes the conditions at an undesirable result for storage as impacts to the use of existing wells and beneficial users of groundwater, and states that the “significant and unreasonable decline in storage would result in limiting the volume of groundwater available for agriculture, municipal, industrial, and domestic uses without any PMAs to mitigate the impact by new and deeper wells.”²⁰⁸

GSP Regulations require that GSAs establish minimum thresholds using a numeric value that represents a point in the basin, that, if exceeded, may cause undesirable results.²⁰⁹ The 2024 GSP does not clearly provide the information and criteria relied upon to establish and justify the minimum thresholds for reductions in groundwater storage. The 2024 GSP states that minimum thresholds for groundwater storage are established by the “amount of groundwater in storage when groundwater elevations are at their measurable objective;”²¹⁰ however, the 2024 GSP also states that “The [minimum thresholds] for reduction in groundwater storage is a single value of average groundwater elevation over the entire Subbasin. Therefore, the potential conflict between [minimum thresholds] MTs at different locations in the Subbasin is not applicable.”²¹¹ The 2024 GSP generally indicates that it plans to use groundwater levels as a proxy for storage but does not state that levels minimum thresholds are being used as storage thresholds. Department staff recommend the GSA revise its description of its sustainable management criteria for storage so that its selected approach is clear. Additionally, the minimum threshold definition stated for reduction in groundwater storage in the sustainable management criteria table is inconsistent with the definition for minimum thresholds described in the text and should be revised to present a consistent definition for reduction in groundwater minimum thresholds throughout the 2024 GSP.²¹²

The 2024 GSP identifies the criteria used to establish measurable objectives and interim milestones for groundwater storage. The 2024 GSP states: “The [measurable objectives] for reduction on groundwater storage were developed using the same methodology as the chronic lowering of groundwater elevations [measurable objectives]. They are set to

²⁰⁶ 23 CCR § 354.28(c)(2).

²⁰⁷ 2024 Los Molinos GSP, Table 3-13, p. 328.

²⁰⁸ 2024 Los Molinos GSP, Section 3.4.1, p. 329.

²⁰⁹ 23 CCR § 354.28(a).

²¹⁰ 2024 Los Molinos GSP, Section 3.3.2.1, p. 319.

²¹¹ 2024 Los Molinos GSP, Section 3.3.2.2, p. 320.

²¹² 2024 Los Molinos GSP, Table 3-13, p.328.

the amount of groundwater storage that exists when the groundwater elevations are at their [measurable objectives].”²¹³ The 2024 GSP uses 2021 spring measurements as the starting point in the development of interim milestones except for well LM-1 which starts interim milestones from spring 2020 groundwater levels. The 2024 GSP provides a summary of interim milestones for the Upper and Lower Aquifers in two tables.²¹⁴

Since the GSA is using groundwater elevation as a proxy to monitor the reduction of groundwater storage, the same recommendations provided in [Section 5.3.2.1](#) regarding updates to the criteria to establish measurable objectives and establishment of sustainable management criteria for all representative monitoring wells also apply for the reduction of groundwater storage.

Department staff conclude that this section of the 2024 GSP will be substantially compliant once the GSA responds to the recommended corrective action and fully updates the section to be consistent with the GSA’s updates to groundwater levels sustainable management criteria.

5.3.2.3 Seawater Intrusion

In addition to components identified in 23 CCR §§ 354.28 (a-b), for seawater intrusion, the GSP Regulations require the minimum threshold for seawater intrusion to be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results.²¹⁵

The 2024 GSP identifies that seawater intrusion is not an applicable sustainability indicator for the Subbasin. The 2024 GSP indicates that the Subbasin is isolated from the Pacific Ocean and is connected to a coastal aquifer, therefore the seawater intrusion sustainability indicator is not applicable.²¹⁶

5.3.2.4 Degraded Water Quality

In addition to components identified in 23 CCR §§ 354.28 (a-b), for degraded water quality, the GSP Regulations require the minimum threshold for degraded water quality to be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.²¹⁷

As discussed above in [Section 5.2.2](#), groundwater quality for the Subbasin is focused on four groundwater constituents including TDS, nitrate, arsenic, and coliform bacteria in the

²¹³ 2024 Los Molinos GSP, Section 3.2.2.1, p. 302.

²¹⁴ 2024 Los Molinos GSP, Section 3.2.2.2, p. 302, Tables 3-2 and 3-3, p. 301.

²¹⁵ 23 CCR § 354.28(c)(3).

²¹⁶ 2024 Los Molinos GSP, Section 3.0, p. 293.

²¹⁷ 23 CCR § 354.28(c)(4).

2024 GSP. Of these constituents, arsenic is identified by the GSA as a “groundwater quality concern in some areas in the Subbasin”²¹⁸ with the source of arsenic attributed as a naturally occurring element from geological deposits in the Subbasin. The remaining constituents evaluated (TDS and nitrate) were determined by the GSA to presently not be a groundwater quality concern in the Subbasin.²¹⁹ Despite this conclusion, the GSA elected to exclusively choose TDS as “constituent of concern for beneficial users in the Subbasin” in the 2024 Plan “[b]ased on review of groundwater quality in Chapter 2 [Groundwater Quality]” for the Subbasin.²²⁰ The 2024 GSP states that “SGMA’s water quality objective focuses on a constituent’s contribution due to activities at the land surface rather than on the presence of naturally occurring constituents.”²²¹ The 2024 GSP does not provide a clear rationale as to why TDS was exclusively selected for groundwater quality sustainable management criteria in the Subbasin, especially considering the GSA’s determination that the “occurrence of Total Dissolved Solids (TDS) at undesirable concentrations is not a concern at present” in the Subbasin.²²² Furthermore, the 2024 GSP does not provide the rationale why sustainable management criteria and a monitoring network was not established for the remaining constituents (nitrate, arsenic or coliform bacteria) included in the evaluation of groundwater quality for the Subbasin.

Department staff note that SGMA specifies that undesirable results for degraded water quality are to be defined by a GSA in terms of significant and unreasonable effects caused by groundwater conditions occurring throughout the Subbasin,²²³ which focuses attention on degradation caused by groundwater extraction, but does not limit the scope of contaminants that a GSA should consider. The GSA must effectively consider local, state, and federal water quality standards, when setting minimum thresholds and measurable objectives, including potentially coordinating with the agencies governing water quality standards and programs, which are set for constituents whether they are naturally occurring or not.²²⁴ Department staff recommend that the GSA either provide additional information to demonstrate that TDS is the subbasin’s only constituent of concern or establish sustainable management criteria applicable to all groundwater constituents that could cause undesirable results in the Subbasin (see [Recommended Correction Action 3a](#)).

The 2024 GSP identifies the cause for significant and unreasonable conditions for the Subbasin “if degraded water quality causes a reduction in the long-term viability of domestic, agricultural, municipal wells, or environmental uses over the planning and implementation of the GSP”²²⁵ and defines undesirable results occurring when “at least

²¹⁸ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

²¹⁹ 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

²²⁰ 2024 Los Molinos GSP, Section 3.3.4.1, p. 323.

²²¹ 2024 Los Molinos GSP, Section 3.3.4.1, p. 323.

²²² 2024 Los Molinos GSP, Section 2.2.2.3, p. 194.

²²³ CWC § 10721(x).

²²⁴ 23 CCR § 354.28(c)(4).

²²⁵ 2024 Los Molinos GSP, Section 3.4.3, p. 329.

25% of RMS exceed the minimum threshold for water quality for two (2) consecutive years at each well where it can be established that GSP implementation is the cause of the exceedance.”²²⁶ The 2024 GSP does not describe a process that would be used to determine if GSP implementation is the cause of the exceedance.

The 2024 GSP’s definition of undesirable results is problematic. GSP Regulations require that the definition of undesirable results be a quantitative combination of minimum threshold exceedances that cause significant and unreasonable effects in the Subbasin.²²⁷ Department staff note that an undescribed process to establish that GSP implementation is the cause of the exceedance is not a quantitative combination of minimum threshold exceedances. Additionally, the 2024 GSP’s description of significant and unreasonable conditions and definition for undesirable results for degraded water quality, which solely focus on water quality impacts caused directly by the GSA implementing an action, represents an improperly narrow reading of SGMA. SGMA includes in its definition of undesirable results the “significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.”²²⁸ SGMA specifies that the significant and unreasonable effects are those “caused by groundwater conditions occurring throughout the Subbasin,”²²⁹ which does not limit them to only impacts directly caused by a GSA’s implementation of physical projects or actions in the Subbasin. Department staff consider this to be inconsistent with the intent of SGMA, which requires GSAs to ensure management of groundwater conditions in the Subbasin, including any action taken by the GSA, will not significantly and unreasonably degrade water quality. Therefore, degraded water quality caused by groundwater pumping, changes in groundwater levels, changes in the direction of groundwater flow, or changes in horizontal or vertical movement of groundwater within the Subbasin, whether the GSA has implemented pumping regulations or not, should be considered in the assessment of undesirable results in the Subbasin. Department staff recommend the GSA revise the description of significant and unreasonable conditions and undesirable results such that groundwater pumping and other factors, whether due to action or inaction of the GSA with respect to Subbasin management, are considered and not excluded (see [Recommended Corrective Action 3b](#)).

The 2024 GSP discusses minimum thresholds for the degradation of groundwater quality. The 2024 GSP establishes minimum thresholds for groundwater quality as the “minimum threshold for TDS is 750 milligrams per liter (mg/L). This threshold is lower than the California State Water Resources Control Board (SWRCB) upper SMCL of 1,000 mg/L as set by SWRCB for taste and odor.”²³⁰ The 2024 GSP provides minimum thresholds for the seven representative monitoring sites in a Table.²³¹

²²⁶ 2024 Los Molinos GSP, Table 3-13, p. 238.

²²⁷ 23 CCR § 354.26(b)(2).

²²⁸ CWC § 10721(x)(4).

²²⁹ 23 CCR 354.26(a).

²³⁰ 2024 Los Molinos GSP, Section 3.3.4.1, p. 323.

²³¹ 2024 Los Molinos GSP, Table 3-11, p. 323.

The 2024 GSP discusses potential effects on beneficial uses and users, and states: “The effect of degraded groundwater quality on agricultural beneficial users is manifested in crop damage and reduced yields, and a reduction in the use of land for irrigated agriculture if the sole water supply is groundwater. Urban and domestic beneficial uses are impacted if degraded water is the only source for potable use. The impacts include the need to use alternative sources of water that may be more expensive than groundwater and potential undesirable aesthetic qualities without pre-treatment of the degraded water prior to use.”²³² Department staff conclude that the minimum threshold for total dissolved solids is substantially compliant.

The 2024 GSP discusses measurable objectives and interim milestones for the degradation of groundwater quality. The Plan establishes a measurable objective for TDS based on the secondary drinking water standards established by SWRCB. The Plan states: “The measurable objective is established at 500 mg/L which represents recommended secondary drinking water standards.”²³³ Interim milestones are summarized in a table provided in the 2024 GSP.²³⁴ Department staff conclude that the measurable objective for total dissolved solids is substantially compliant.

However, Department staff note that GSAs are required to manage future groundwater extraction to ensure that groundwater use subject to its jurisdiction does not significantly and unreasonably exacerbate existing degraded water quality conditions. Where natural and other human factors are contributing to water quality degradation, the GSA may have to confront complex technical and scientific issues regarding the causal role of groundwater extraction and other groundwater management activities, as opposed to other factors, in any continued degradation; but the analysis should be on whether groundwater extraction is causing the degradation in contrast to only looking at whether a specific project or management activity results in water quality degradation. Department staff recommend that the GSA coordinate with the appropriate water quality regulatory programs and agencies in the Subbasin to understand and develop a process for determining when groundwater management and extraction is resulting in degraded water quality in the Subbasin (see [Recommended Corrective Action 3c](#)).

Department staff conclude that overall, the sustainable management criteria for degraded water quality will be substantially compliant when the GSA sufficiently responds to corrective actions.

5.3.2.5 Land Subsidence

In addition to components identified in 23 CCR §§ 354.28 (a-b), the GSP Regulations require the minimum threshold for land subsidence to be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.²³⁵ Minimum thresholds for land subsidence shall be supported by

²³² 2024 Los Molinos GSP, Section 3.3.4.5, p. 324.

²³³ 2024 Los Molinos GSP, Section 3.2.4.1, p. 305.

²³⁴ 2024 Los Molinos GSP, Table 3-5, p. 307.

²³⁵ 23 CCR § 354.28(c)(5).

identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency’s rationale for establishing minimum thresholds in light of those effects and maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum thresholds and measurable objectives.²³⁶

The 2024 GSP establishes sustainable management criteria for land subsidence including undesirable results, minimum thresholds and measurable objectives.²³⁷

The 2024 GSP defines how it will determine whether “undesirable results are considered to occur at a 50% exceedance of a [minimum threshold] over a five (5)-year period that is irreversible and is caused by lowering of groundwater elevations.”²³⁸ The 2024 GSP states that subsidence has not occurred historically nor is occurring during current conditions in the Subbasin.²³⁹

The 2024 GSP discusses minimum thresholds for subsidence. The 2024 GSP selected eight locations in the Subbasin to compare to InSAR subsidence data provided by the Department. At each location, the GSA has selected a single ‘pixel’ of the InSAR coverage and plans to compare values at the eight ‘pixels’ of InSAR data to the minimum threshold. The 2024 GSP selected a minimum threshold of two feet over 20 years, or 0.1 feet per year, to be evaluated once every five years as part of the periodic evaluation to the GSP.²⁴⁰

Department staff note the GSA’s decision to evaluate the InSAR dataset, which is released quarterly, once every five years is problematic and is not using the best available science.²⁴¹ Department staff recommend the GSA evaluate InSAR data against the proposed thresholds as it is released during plan implementation (see [Recommended Corrective Action 4a](#)).

Department staff are concerned that limiting the data evaluated to a monitoring network that consists of single pixels is not using the best available science,²⁴² which is discussed further in this report in [Section 5.4](#).

Department staff are additionally concerned about the GSA’s selection of the undesirable result definition and minimum threshold selection criteria. Department staff note that the 2024 GSP has selected a 50% exceedance of monitoring points as the undesirable result but does not provide an explanation to support this selection. Land subsidence can impact beneficial uses and users in localized areas which would be missed with the current requirement for exceedances to occur at more than 50% of the locations in the

²³⁶ 23 CCR §§ 354.28(c)(5)(A-B).

²³⁷ 2024 Los Molinos GSP, Section 3.4.2, p. 329; Section 3.3.3, pp. 321-323; Section 3.2.3, p. 303.

²³⁸ 2024 Los Molinos GSP, Section 3.4.1.3, pp. 327-328.; Table 3-15, pp. 326-327.

²³⁹ 2024 Los Molinos GSP, Section 3.4.2, p. 329.

²⁴⁰ 2024 Los Molinos GSP, Section 3.3.3.1, p. 321; Table 3-10, p. 322.

²⁴¹ 23 CCR § 355.4(b)(1).

²⁴² 23 CCR § 355.4(b)(1).

Subbasin. ²⁴³ Department staff recommend the GSA revise the sustainability management criteria to account for impacts to beneficial uses and users in localized areas (see [Recommended Corrective Action 4b](#)).

The 2024 GSP also described criteria used to select minimum thresholds as “established by calculating the vertical displacement from June 2015 to September 2019 and doubling the value.”²⁴⁴ Department staff note that the criteria used to establish the minimum threshold for subsidence doubles the ongoing subsidence rate and is not connected to impacts to beneficial uses and users. GSP Regulations require that GSAs consider impacts to beneficial uses and users of groundwater or land uses and property interests.²⁴⁵ Department staff recommend the GSA set sustainable management criteria while considering beneficial uses and users, not by projecting pre-SGMA conditions. Department staff additionally note that the minimum threshold as currently defined would allow 0.49 feet of subsidence to occur every five years without leading to undesirable results and is multiple times greater than the maximum land subsidence that the 2024 GSP reports.²⁴⁶ Allowing subsidence to occur into the future is not minimizing or avoiding subsidence as intended by SGMA.²⁴⁷ Department staff recommend the GSA set an annual rate and cumulative total amount of subsidence that will lead to undesirable results (see [Recommended Corrective Action 4c](#)).

The 2024 GSP establishes measurable objectives for subsidence. The 2024 GSP selected 0.05 feet per year (0.25 feet per 5 years, or 1 foot per 20 years), and the GSA assumes any subsidence measurements less than 0.1 feet are instrument error and not accurate and would not be considered inelastic subsidence.²⁴⁸ The GSA provided measurable objectives in Table 3-4.²⁴⁹

Department Staff conclude the 2024 GSP will have substantially complied with GSP Regulations if recommended corrective actions are addressed.

5.3.2.6 Depletions of Interconnected Surface Water

SGMA defines undesirable results for the depletion of interconnected surface water as those that have significant and unreasonable adverse impacts on beneficial uses of surface water and are caused by groundwater conditions occurring throughout the basin.²⁵⁰ The GSP Regulations require that a Plan identify the presence of interconnected surface water systems in the basin and estimate the quantity and timing of depletions of those systems.²⁵¹ The GSP Regulations further require that minimum thresholds be set based on the rate or volume of surface water depletions caused by groundwater use,

²⁴³ 23 CCR § 354.26(b)(3).

²⁴⁴ 2024 Los Molinos GSP, Section 3.3.3.1, p. 326.

²⁴⁵ 23 CCR § 354.28(b)(4).

²⁴⁶ 2024 Los Molinos GSP, Figure 2-61, p. 201.

²⁴⁷ CWC § 10720(e).

²⁴⁸ 2024 Los Molinos GSP, Section 3.2.3.1, p. 303.

²⁴⁹ 2024 Los Molinos GSP, Table 3-4, p. 303.

²⁵⁰ Water Code § 10721(x)(6).

²⁵¹ 23 CCR § 354.16(f).

supported by information including the location, quantity, and timing of depletions, that adversely impact beneficial uses of the surface water and may lead to undesirable results.²⁵²

The Plan acknowledges the presence of likely interconnected surface waters in the Subbasin and identifies their location by relying on a dataset developed by the Nature Conservancy.²⁵³ The GSA plans to address data gaps that currently preclude evaluation of surface water interconnectivity in the Subbasin and “will update the Undesirable Results definition to include depletion of interconnected surface water in the 5-year GSP Periodic Evaluation due in January 2027, and following the release of DWR’s guidance on interconnected surface water analysis and SMC setting.”²⁵⁴ The 2024 GSP provides a map that identifies the locations of likely interconnected streams and classifies the streams into three classes; (1) likely interconnected, (2) likely disconnected, and (3) uncertain.²⁵⁵ The GSP states that “Losing and gaining stream segments categorized using the calibrated Tehama Integrated Hydrologic Model are included in Sub-appendix G of Appendix 2-J”;²⁵⁶ however, no sub-appendices are included in Appendix 2-J. The 2024 GSP does not quantify the rate or volume of surface water depletions due to groundwater pumping in the sustainable management criteria as required by GSP Regulations.²⁵⁷ Instead, the 2024 GSP explains that the GSA will continue to evaluate new monitoring information and determine these thresholds later.”²⁵⁸ Department staff recommend the GSA estimate the quantity and timing of depletions of interconnected surface water systems prior to the next periodic evaluation (see [Recommended Corrective Action 5a](#)).

The 2024 GSP establishes an interim undesirable result for interconnected surface water and states: “Initial undesirable results for depletion of interconnected surface water were developed for this GSP due to data gaps. These interim undesirable results mirror those established for chronic lowering of groundwater elevations. Therefore, undesirable results will occur when 25% of groundwater elevations measured at [representative monitoring sites] RMS wells drop below the associated threshold during two (2) consecutive fall measurements.”²⁵⁹ The 2024 GSP identifies the potential effects on environmental beneficial uses and users from the depletion of interconnected surface water in the Subbasin including “damage groundwater dependent ecosystems and other vegetation and native species reliant on these surface water sources,”²⁶⁰ but the 2024 GSP does not define the conditions in the Subbasin that would constitute an undesirable result as

²⁵² 23 CCR § 354.28(c)(6).

²⁵³ 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205.

²⁵⁴ 2024 Los Molinos GSP, Section 3, p. 290; Section 3.7.8.7, p. 350.

²⁵⁵ 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205; Figure 2-63, p. 204.

²⁵⁶ 2024 Los Molinos GSP, Section 2.2.2.6.1, p. 205.

²⁵⁷ 23 CCR § 354.28(c)(6).

²⁵⁸ 2024 Los Molinos GSP, Section 3.3.5.1, p. 324.

²⁵⁹ 2024 Los Molinos GSP, Section 3.4.4, p. 329; Table 3-13, p. 328.

²⁶⁰ 2024 Los Molinos GSP, Section 3.4.5, p. 329.

required by GSP Regulations.²⁶¹ Department staff recommend the GSA define and describe what conditions constitute undesirable results for the depletion of interconnected surface water in the Subbasin (see [Recommended Corrective Action 5b](#)).

The 2024 GSP describes minimum thresholds for interconnected surface water. The 2024 GSP states that the “Minimum thresholds are interim and will be the same water levels used in for the chronic lowering of groundwater elevations described in Section 3.3.1.1. The GSA will continue to evaluate new monitoring information and determine these thresholds later. For the interim, minimum thresholds for the chronic lowering of groundwater elevations will be used as a proxy for interconnected surface waters. Wells within one mile of interconnected surface water features will be used.”²⁶² The minimum thresholds are summarized in a Table.²⁶³ The 2024 GSP describes data gaps for interconnected surface water in Section 3.7.8.7,²⁶⁴ but does not provide a clear plan or schedule to fill the identified data gaps.

The 2024 GSP describes interim measurable objectives for interconnected surface water until data gaps are addressed. The 2024 GSP states: “The [measurable objectives] MO for the chronic lowering of groundwater elevations will be used as a proxy for interconnected surface waters. Until sufficient data is available, it is assumed that existing surface water – groundwater interactions will not considerably change when sustainable groundwater levels occur in the Subbasin.”²⁶⁵

Department staff note that projects and management actions described in the 2024 GSP intended to fill data gaps are not identified as projects to be implemented upon plan adoption, rather, they are optional projects that the GSA may determine to implement at an unknown future date.²⁶⁶ Department staff additionally note that the efforts to fill data gaps do not include a schedule, and that GSP Regulations require GSAs to fill data gaps by the next periodic evaluation.²⁶⁷ Department staff recommend the GSA expeditiously works toward establishing the necessary information and methodologies to estimate the location, quantity, and timing of depletion of interconnected surface waters as required by the GSP Regulations (see [Section 5.5](#)).

Department staff understand that quantifying depletions of surface water from groundwater extractions is a complex task that likely requires developing new, specialized tools, models, and methods to understand local hydrogeologic conditions, interactions, and responses. During the initial review of GSPs, Department staff have observed that most GSAs have struggled with this new requirement of SGMA. However, Department staff believe that most GSAs will more fully comply with regulatory requirements after several years of Plan implementation that includes projects and management actions to

²⁶¹ 23 CCR § 354.26(b)(3).

²⁶² 2024 Los Molinos GSP, Section 3.3.5.1, p. 324.

²⁶³ 2024 Los Molinos GSP, Table 3-12, p. 325.

²⁶⁴ 2024 Los Molinos GSP, Section 3.7.8.7, pp. 350.

²⁶⁵ 2024 Los Molinos GSP, Section 3.2.5.1, p. 307.

²⁶⁶ 2024 Los Molinos GSP, Table 4-3, p. 372.

²⁶⁷ 23 CCR § 354.38(d).

address the data gaps and other issues necessary to understand, quantify, and manage depletions of interconnected surface waters. Accordingly, Department staff believes that affording GSAs adequate time to refine their Plans to address interconnected surface waters is appropriate and remains consistent with SGMA’s timelines and local control preferences.

The Department will continue to support GSAs in this regard by providing, as appropriate, financial and technical assistance to GSAs, including the development of guidance describing appropriate methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water caused by groundwater extractions. Once the Department’s guidance related to depletions of interconnected surface water is publicly available, the GSA, where applicable, should consider incorporating appropriate guidance approaches into their future periodic evaluations of the GSP (see [Recommended Corrective Action 5c](#)). GSAs should consider availing themselves of the Department’s financial or technical assistance, but in any event must continue to fill data gaps, collect additional monitoring data, and implement strategies to better understand and manage depletions of interconnected surface water caused by groundwater extractions and define segments of interconnectivity and timing within their jurisdictional area (see [Recommended Corrective Action 5d](#)). Furthermore, GSAs should coordinate with local, state, and federal resources 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 (see [Recommended Corrective Action 5e](#)).

5.4 MONITORING NETWORK

The GSP Regulations describe the monitoring network that must be developed for each sustainability indicator including monitoring objectives, monitoring protocols, and data reporting requirements. Collecting monitoring data of a sufficient quality and quantity is necessary for the successful implementation of a groundwater sustainability plan. The GSP Regulations require a monitoring network of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.²⁶⁸ Specifically, a monitoring network must be able to monitor impacts to beneficial uses and users,²⁶⁹ monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds,²⁷⁰ capture seasonal low and high conditions,²⁷¹ include required information such as location and well construction and include maps and tables clearly showing the monitoring site type, location, and frequency.²⁷² Department staff encourage GSAs to collect monitoring data as specified in the GSP, follow SGMA data

²⁶⁸ 23 CCR § 354.32.

²⁶⁹ 23 CCR § 354.34(b)(2).

²⁷⁰ 23 CCR § 354.34(b)(3).

²⁷¹ 23 CCR § 354.34(c)(1)(B).

²⁷² 23 CCR §§ 354.34(g-h).

and reporting standards,²⁷³ fill data gaps identified in the GSP prior to the first periodic evaluation,²⁷⁴ update monitoring network information as needed, follow monitoring best management practices,²⁷⁵ and submit all monitoring data to the Department's Monitoring Network Module immediately after collection including any additional groundwater monitoring data that is collected within the Plan area that is used for groundwater management decisions. Department staff note that if GSA does not fill its identified data gaps, the GSA's basin understanding may not represent the best available science for use to monitor basin conditions.

The 2024 GSP includes monitoring networks for the chronic lowering of groundwater levels, degraded water quality, and land subsidence sustainability indicators. The 2024 GSP currently uses the groundwater level monitoring network as a proxy for the reduction of groundwater in storage and depletion of interconnected surface water sustainability indicators.

The 2024 GSP states that the monitoring well network for groundwater quality was determined using the Department's Best Management Practice for Monitoring Network guidance document,²⁷⁶ using hexagonal tessellations to establish an adequate spatial density of wells and specific selection criteria largely based on geographical variation and the period and availability of monitoring records.²⁷⁷ The 2024 GSP identifies six existing monitoring wells and one planned monitoring well in the Upper Aquifer, and three existing monitoring well and one planned monitoring well in the Lower Aquifer.²⁷⁸ The 2024 Plan states that the monitoring frequency for the groundwater level monitoring network is biannually during the spring and fall.²⁷⁹ The 2024 GSP provides maps showing the locations of the wells in the Upper Aquifer²⁸⁰ and Lower Aquifer.²⁸¹

The 2024 GSP states that the recommended basin-wide density of monitoring wells in the Subbasin is 1 well per 25 square miles for basins pumping more than 10,000 acre-feet/year per 100 square miles, and that the Subbasin's area is approximately 155 square miles, "yielding one (1) monitoring well at the minimum per aquifer".²⁸² Department staff note that 155 divided by 25 returns a recommended six monitoring wells per aquifer which is consistent with the groundwater level monitoring network for the Upper Aquifer, but is two less wells than recommended by the 2024 GSP's standards for groundwater monitoring in the Lower Aquifer.²⁸³ Department staff recommend the GSA fully monitor

²⁷³ 23 CCR § 352.4 *et seq.*

²⁷⁴ 23 CCR § 354.38(d).

²⁷⁵ Department of Water Resources, 2016, [Best Management Practices and Guidance Documents](#).

²⁷⁶ Department of Water Resources, 2016, [Best Management Practices and Guidance Documents](#).

²⁷⁷ 2024 Los Molinos GSP, Section 3.6.2, pp. 333-334; Table 3-17, p. 336.

²⁷⁸ 2024 Los Molinos GSP, Tables 3-15 and 3-16, p. 335.

²⁷⁹ 2024 Los Molinos GSP, Tables 3-15 and 3-16, p. 335.

²⁸⁰ 2024 Los Molinos GSP, Figure 3-2, p. 299.

²⁸¹ 2024 Los Molinos GSP, Figure 3-3, p. 300.

²⁸² 2024 Los Molinos GSP, Section 3.6.2, p. 333.

²⁸³ 2024 Los Molinos GSP, Tables 3-15 and 3-16, p. 335.

the Subbasin to the GSA's proposed standards with consideration for the locations of beneficial uses and users.

GSP Regulations require that monitoring for the chronic lowering of groundwater levels must include a sufficient density of monitoring wells for each principal aquifer²⁸⁴ and Department staff note that the number of wells included in the 2024 GSP's monitoring network for the Lower Aquifer does not adhere to the 2024 GSP's own recommended spatial density, thus limiting the GSA's ability to sufficiently evaluate potential groundwater quality impacts to beneficial uses or users of groundwater.²⁸⁵ Additionally, Department staff note that the groundwater level monitoring network for the Upper and Lower Aquifers include a planned aquifer-specific nested well stated in the 2024 GSP to be installed by the GSA. Although installation of the nested well is briefly discussed in the 2024 GSP,²⁸⁶ a schedule of when well installation will occur is not provided. GSP Regulations require GSAs to fill data gaps by the next periodic evaluation.²⁸⁷

Department staff conclude the 2024 GSP's monitoring network for the chronic lowering of groundwater levels for the Lower Aquifer is not sufficient, does not meet the 2024 GSP's recommended spatial density and is inadequate to monitor impacts to beneficial uses or users of groundwater,²⁸⁸ is inadequate to evaluate conditions relative to measurable objectives and minimum thresholds,²⁸⁹ and limits the ability of the GSA to quantify water budget components.²⁹⁰ Furthermore, the 2024 GSP does not provide a schedule when the planned aquifer-specific nested well included in the groundwater level monitoring network will be installed. The poor distribution of wells in the Lower Aquifer and pending installation of the aquifer-specific nested well noted in the groundwater level monitoring network represents a data gap that should be addressed in the Subbasin by the next periodic evaluation (see [Recommended Corrective Action 6a](#)).

The 2024 Plan stated that a comprehensive review of the monitoring networks for the Subbasin will be conducted every five (5) years as part of the periodic evaluation for the Subbasin.²⁹¹

The 2024 GSP proposes to use the groundwater level monitoring network as a proxy for the groundwater storage monitoring network since groundwater levels serve as a practical proxy for evaluating reduction in groundwater storage.²⁹² As detailed in the review of sustainable management criteria for reduction in groundwater storage in [Section 5.3.2.2](#), the 2024 GSP generally indicates that it plans to use groundwater levels as a proxy for storage, but does not state that the chronic lowering of groundwater levels minimum

²⁸⁴ 23 CCR § 354.34(c)(1)(A).

²⁸⁵ 23 CCR § 354.34(b)(2).

²⁸⁶ 2024 Los Molinos GSP, Section 3.7.8.8, p. 350.

²⁸⁷ 23 CCR § 354.38(d).

²⁸⁸ 23 CCR § 354.34(b)(1).

²⁸⁹ 23 CCR 354.34(b)(2).

²⁹⁰ 23 CCR 354.34(b)(3).

²⁹¹ 2024 Los Molinos GSP, Section 3.7.8.1, p. 349.

²⁹² 2024 Los Molinos GSP, Section 3.2.2.3, p. 302.

thresholds are being used as storage thresholds. Department staff cannot infer commitments by the GSA, and quantitative value for the minimum thresholds for reductions in storage was not provided.²⁹³

Should the GSA plan to use the monitoring network for the chronic lowering of groundwater levels as a proxy for storage, Department staff recommend that the GSA clearly indicate its intent to do so and provide a justification for the appropriateness of using levels as a proxy. GSP Regulations require GSAs to demonstrate that significant correlation exists between groundwater elevations and the reduction in storage,²⁹⁴ and that groundwater level measurable objectives take into consideration Subbasin settings to avoid undesirable results for reduction in storage.²⁹⁵

The 2024 GSP states the seawater intrusion sustainability indicator is not applicable to this subbasin; therefore, no monitoring network is proposed.²⁹⁶ Department staff agree the sustainability indicator for seawater intrusion is not present in this Subbasin and therefore, the monitoring of seawater intrusion is not required.

The 2024 GSP describes its degraded water quality monitoring network. The 2024 Plan identifies six existing wells and one planned monitoring well in the monitoring network for the degraded water quality sustainability indicator and provides the basis for their selection and a map showing their locations.²⁹⁷ The 2024 GSP indicates that the degraded water quality monitoring network does not monitor the lower principal aquifer.²⁹⁸ The monitoring frequency for the groundwater quality monitoring network is indicated as bi-annual (spring and fall) in the 2024 GSP.²⁹⁹ The proposed groundwater quality monitoring network is utilizing the same upper principal aquifer wells included groundwater level monitoring network.³⁰⁰

GSP Regulations require GSAs to collect sufficient spatial and temporal data from each principal aquifer to determine groundwater quality trends,³⁰¹ and to monitor impacts to beneficial uses or users of groundwater.³⁰² Since the 2024 GSP proposes to not monitor the lower aquifer, the GSA cannot determine groundwater quality trends, nor impacts to beneficial uses and users in the lower aquifer. Department staff recommend that the GSA add additional monitoring wells to the groundwater quality monitoring network for the lower aquifer (see [Recommended Corrective Action 6b](#)). Furthermore, since the 2024 Plan is planning to use the same wells included in the groundwater level monitoring network, the same recommendations regarding the spatial distribution of wells and

²⁹³ 2024 Los Molinos GSP, Section 3.3.2, pp. 319- 321; Section 3.2.2, pp. 302-303.

²⁹⁴ 23 CCR § 354.36(b)(1).

²⁹⁵ 23 CCR § 354.36(b)(2).

²⁹⁶ 2024 Los Molinos GSP, Section 3.6.1, p. 330.

²⁹⁷ 2024 Los Molinos GSP, Table 3-24, p. 342; Figure 3-5, p. 306.

²⁹⁸ 2024 Los Molinos GSP, Section 3.6.5, p. 340; Table 3-24, p. 342.

²⁹⁹ 2024 Los Molinos GSP, Table 3-23, p. 341.

³⁰⁰ 2024 Los Molinos GSP, Table 3-14, p. 332.

³⁰¹ 23 CCR §354.34(c)(4)

³⁰² 23 CCR §354.34(b)(2).

schedule to install planned nested wells in the upper and lower principal aquifers also apply to the water quality monitoring network.

The 2024 GSP describes the land subsidence monitoring network. The 2024 GSP indicates that InSAR data spans the entirety of the Subbasin, “has a relatively small error margin (18 mm or 0.06 ft) and is available to download on a monthly or annual basis with continuous measurements”.³⁰³ Despite InSAR covering the entire Subbasin, the GSA selected to evaluate eight ‘pixels’ for vertical displacement located near groundwater monitoring wells identified as representative monitoring sites in the Subbasin.³⁰⁴ The 2024 GSP provides locations of the subsidence representative monitoring sites in a map.³⁰⁵ The 2024 GSP justifies selection of the subsidence representative monitoring sites by claiming that this will “allow the GSA 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”.³⁰⁶ Department staff note that the data could be used for that purpose without restricting which ‘pixels’ are used to monitor for subsidence.

Department staff note that this approach artificially limits the subsidence monitoring data that is considered by the GSA. As noted in the 2024 GSP, subsidence data is available in the Subbasin from three different monitoring programs including PBO stations, 2017 GPS Survey Data from the Department, and InSAR satellite vertical displacement data,³⁰⁷ but how the GSA plans to use non-InSAR data is not clear in the 2024 GSP. The 2024 GSP states that PBO stations were not selected for the monitoring program since “none of the PBO stations exist inside the Subbasin”³⁰⁸; despite the GSA having identified “one PBO monitoring station within the Subbasin (P344)” in the basin setting section of the 2024 that it notes has questionable data.³⁰⁹ The GSP does not discuss the use of the GPS Survey data as part of its monitoring program.

GSP Regulations require GSAs to monitor for subsidence to identify the rate and extent of land subsidence, which may be measured by extensometers, surveying, remote sensing technology, or other appropriate method,³¹⁰ and to monitor impacts to beneficial uses or users.³¹¹ Additionally, Department staff evaluate GSP’s to determine whether the GSP is reasonable and supported by the best available information and science.³¹² Department staff conclude the GSA’s proposed monitoring network does not sufficiently identify the rate and extent of land subsidence, consider beneficial uses and users, nor reflect the best available science, as the approach to limit review of monitoring to pixels of data does not provide spatial coverage to understand the extent of subsidence, nor

³⁰³ 2024 Los Molinos GSP, Section 3.6.4, p. 338.

³⁰⁴ 2024 Los Molinos GSP, Section 3.6.4, p. 338, Table 3-21, p. 339.

³⁰⁵ 2024 Los Molinos GSP, Figure 3-4, p. 304.

³⁰⁶ 2024 Los Molinos GSP, Section 3.6.4, p. 348.

³⁰⁷ 2024 Los Molinos GSP, Section 3.6.4, p. 348.

³⁰⁸ 2024 Los Molinos GSP, Section 3.6.4, p. 348.

³⁰⁹ 2024 Los Molinos GSP, Section 2.2.2.5, p. 198.

³¹⁰ 23 CCR § 354.34(c)(5).

³¹¹ 23 CCR § 354.34(b)(2).

³¹² 23 CCR § 354.4(b)(1).

monitor where beneficial uses and users are located, and does not represent the best available science, when monitoring is available that provides coverage across the Subbasin. Department staff recommend the GSA update its monitoring network using a method that addresses these concerns (see [Recommended Corrective Action 6c](#)).

The 2024 GSP discusses interconnected surface water monitoring. The 2024 GSP states that “Groundwater level monitoring wells within 1 mile of water bodies will be used as a proxy for monitoring”³¹³ interconnected surface water. The 2024 GSP includes a table of seven monitoring sites for interconnected surface water,³¹⁴ shows that wells have screened intervals ranging 40 to 360 feet deep, and the 2024 GSP includes a second table that shows the basis for selection is that the well is an ‘upper aquifer well’.³¹⁵ Department staff note that wells screened in deeper groundwater zones may not be applicable to monitor interconnected surface water conditions and note that the GSA recognizes the lack of shallow wells (<50 feet) as a data gap to monitor interconnected surface water as discussed below.

The 2024 GSP includes a map showing the locations of upper aquifer wells planned to be used as a proxy to monitoring interconnected surface water.³¹⁶ Department staff note that this map identifies an additional representative monitoring site for interconnected surface water (Ant-3U) that is not included in the table of representative monitoring sites.³¹⁷ Since this well is not included in the groundwater level monitoring well network which the GSA is utilizing as a proxy for interconnected surface water, it is unclear why this well is identified as an additional representative monitoring site on this map. Department staff recommend that the GSA consistently and accurately report the number of representative monitoring sites to monitor interconnected surface water in annual reports and periodic evaluations. A discussion of which streams were considered interconnected stream reaches was not included in the section. The 2024 GSP proposes that all monitoring wells have a semi-annual (fall and spring) monitoring frequency³¹⁸ but does not explain how or why the proposed frequency is appropriate to characterize the spatial and temporal exchanges between surface water and groundwater.

The 2024 GSP provides a discussion of data gaps for interconnected surface water. The 2024 GSP identifies “extensive data gaps” for interconnected surface water as “the lack of shallow (< 50 feet) monitoring wells in the vicinity of interconnected surface waters and critical groundwater dependent ecosystem (GDEs) and the lack of stream gages”.³¹⁹ The 2024 Plan also notes another data gap as the lack of collocated shallow monitoring wells and stream gauges in the Subbasin to provide historical surface and groundwater measurements. The 2024 GSP states that “the GSA will look at the data gaps brought

³¹³ 2024 Los Molinos GSP, Section 3.6.6, p 342.

³¹⁴ 2024 Los Molinos GSP, Table 3-25, p. 343.

³¹⁵ 2024 Los Molinos GSP, Tables 3-25 and 3-26, p. 343.

³¹⁶ 2024 Los Molinos GSP, Figure 3-6, p. 308.

³¹⁷ 2024 Los Molinos GSP, Table 3-25, p. 343.

³¹⁸ 2024 Los Molinos GSP, Table 3-18, p. 337.

³¹⁹ 2024 Los Molinos GSP, Section 3.7.8.7, p. 350.

forth in the GDE and surface water data assessment and aim to bridge these gaps through the installation of shallow monitoring wells and stream gages near areas of concern. Also, it will consider conducting synoptic stream gaging where conditions are safe to do so.”³²⁰ Department staff note that there is a management action called ‘Additional Studies of GDEs and Groundwater – Surface Water Interactions’ is listed in the 2024 GSP’s projects and management actions section,³²¹ that may evaluate monitoring of interconnected surface water, but will only be implemented “if determined to be necessary or useful... pending future conditions” and the “start and completion date have yet to be determined.”³²² Because the plan to fill data gaps for interconnected surface water relies on a study that may not occur, Department staff conclude the GSA is unlikely to fill this data gap based on the information provided in the 2024 GSP. Department staff note that GSP Regulations require GSAs to provide the steps that will be taken to fill data gaps before the next five year assessment, including the location and purpose of newly added monitoring sites.³²³ Department staff note that the 2024 GSP has not provided the steps to be taken, nor the location and purpose of future monitoring sites for interconnected surface water, and recommend the GSA develop this required information as soon as possible.

Lastly, the GSP Regulations require GSPs to provide specific information about each monitoring site per the data and reporting standards.³²⁴ It is imperative the GSA work to ensure the information defining the monitoring network is consistent within the GSP, consistent with the Department’s Monitoring Network Module, and follow the data and reporting standards. Department staff recommend there be a reconciliation between the details of the monitoring network provided in the GSP with the requirements of the data and reporting standards in the GSP Regulations.

Once the GSA has sufficiently responded to recommended corrective actions for this section, the 2024 GSP will have demonstrated substantial compliance with the GSP Regulations.

5.5 PROJECTS AND MANAGEMENT ACTIONS

The GSP Regulations require a description of the projects and management actions the submitting Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.³²⁵ Each Plan’s description of projects and management actions must include details such as: how projects and management actions in the GSP will achieve

³²⁰ 2024 Los Molinos GSP, Section 3.7.8.8, p. 350.

³²¹ 2024 Los Molinos GSP, Table 4-27 and 4-29, pp. 418 and 421; Section 4.5.3.2, p. 420.

³²² 2024 Los Molinos GSP, Table 4-29, p. 421.

³²³ 23 CCR § 354.38(d).

³²⁴ 23 CCR § 352.4 *et seq.*

³²⁵ 23 CCR § 354.44(a).

sustainability, the implementation process and expected benefits, and prioritization and criteria used to initiate projects and management actions.³²⁶

The 2024 GSP includes projects and management actions to be implemented by an adaptive management process. The 2024 Plan states that the Subbasin is “expected to be sustainable through 2042 and beyond” without projects and management actions, but projects and management actions will be initiated as needed to “support ongoing sustainability and adapt to potential future changes in Subbasin conditions.”³²⁷ Department staff note the 2024 GSP identified in its basin settings section that the historical water budget indicates a total loss of cumulative groundwater storage during the historical period (1990-2018) of 74,000 acre-feet, or about -2,500 acre-feet per year,³²⁸ and the projected water budget with consideration of climate change indicated an annual loss of -2,300 acre feet per year.³²⁹ Department staff additionally note that the 2024 GSP also now identifies a rate of decline (7.5 feet over 5 years) that would be significant and unreasonable at any representative monitoring site,³³⁰ and that this rate is less than historic declines in four of the nine representative monitoring points and avoiding an undesirable result through this condition may require action by the GSA. Department staff recommend the GSA consider expanding its project and management action portfolio to address these declines in storage so that the GSA may manage the Subbasin sustainably.

The 2024 GSP includes projects and management actions that are separated into two categories; 1) projects and management actions developed for implementation, and 2) a portfolio of other potential projects and management actions that may be implemented as needed.³³¹

The 2024 GSP presents projects developed for implementation including:

1. “The Multi-Benefit Recharge Project is a program developed with The Nature Conservancy (TNC) to provide a dual benefit of creating critical habitat for migrating bird species while recharging groundwater supplies.
2. The Grower Education Relating to On-Farm Practices Program will provide growers with educational resources to implement practices that will result in more efficient water use while improving agricultural productivity.
3. The Deer Creek Instream Flow Enhancement Project proposes to increase in-stream flows at critical fish passage times by reducing Deer Creek diversions through increased conjunctive use of groundwater, improved on-farm water use efficiency, and modernization of water district infrastructure.

³²⁶ 23 CCR § 354.44(b) *et seq.*

³²⁷ 2024 Los Molinos GSP, Section 4.4, p. 377.

³²⁸ 2024 Los Molinos GSP, Section 2.3.5.3, p. 248; Table 2-21, p. 251.

³²⁹ 2024 Los Molinos GSP, Table 2-31, p. 277; Section 3.2.10, p. 278.

³³⁰ 2024 Los Molinos GSP, Section 3.0, p. 290.

³³¹ 2024 Los Molinos GSP, Section 4.1.1.2, p. 361.

4. The Lower Deer Creek Improvements and Habitat Restoration Project will setback the levees on Lower Deer Creek to increase floodplain habitat by approximately 40 acres while also providing off-channel recharge during high flow periods.
5. Demand Management includes various measures to reduce demand on existing groundwater resources in the Subbasin.
6. The Well Mitigation Program will provide assistance to domestic, small water systems, and municipal wells adversely impacted by declining groundwater levels since 2015 that interfere with groundwater production or quality.”³³²

The GSP describes the above project and management actions with a description, general plan for implementation, the relationship to sustainability criteria, expected benefits, metrics for evaluation and legal authority.³³³ Department staff note that funding sources are in development for many of the projects³³⁴ and implementation of the majority of projects and management actions is stated in GSP to occur before 2042 though the precise year is to be determined.³³⁵

Projects and management actions in the “Portfolio of Other Potential Projects and Management Actions” are described in the 2024 GSP,³³⁶ however the descriptions provided are vague. Department staff note that descriptions of all projects in this group do not include locations, cost estimates, estimates of benefits, or start dates.³³⁷ Many projects and management actions in this group are described as ‘currently in the early planning stage’.³³⁸ Department staff note that projects to identify and fill data gaps are included in this group and that these projects are also not described in detail. GSP Regulations require GSAs to describe the steps taken that will fill data gaps by the next five-year assessment, including the location and purpose of newly added monitoring, and Department staff would like to remind the GSA that it may not be using the best available science³³⁹ if it fails to fill data gaps in a timely manner.

Department staff conclude the 2024 GSP’s projects and management actions substantially comply with the GSP Regulations, once corrective actions have been addressed.

5.6 CONSIDERATION OF ADJACENT BASINS/SUBBASINS

SGMA requires the Department to “...evaluate whether a groundwater sustainability plan adversely affects the ability of an adjacent basin to implement their groundwater sustainability plan or impedes achievement of sustainability goals in an adjacent

³³² 2024 Los Molinos GSP, Section 3.1.3, p. 296.

³³³ 2024 Los Molinos GSP, Sections 4.4.1-4.4.7, pp. 377-394; Table 4-4., p. 373.

³³⁴ 2024 Los Molinos GSP, Section 4.6, p. 428.

³³⁵ 2024 Los Molinos GSP, Table 4-3, p. 372.

³³⁶ 2024 Los Molinos GSP, Section 4.5-4.5.3.7, p. 394-427.

³³⁷ 2024 Los Molinos GSP, Sections 4.5.1.1 through 4.5.3.7, Tables 4-20 through 4-43.

³³⁸ 2024 Los Molinos GSP, Sections 4.5.2.1 through 4.5.2, pp. 4.5.2.5, pp. -417.

³³⁹ 23 CCR § 355.4(b)(1).

basin.”³⁴⁰ Furthermore, the GSP Regulations state that minimum thresholds defined in each GSP should be designed to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.³⁴¹

The Subbasin is adjacent to several subbasins that may be affected by the management of as described in the 2024 GSP:

- a. Antelope Subbasin: The Antelope Subbasin is managed by the Tehama County Flood Control and Conservation District GSA and is being managed to similar undesirable results and minimum threshold conditions to the Los Molinos Subbasin and is unlikely to be adversely affected.
- b. Corning Subbasin: The Corning Subbasin is also managed by the Tehama County Flood Control and Conservation District GSA and is being managed to similar undesirable results and minimum threshold conditions to the Los Molinos Subbasin and is unlikely to be adversely affected.
- c. Red Bluff Subbasin: The Antelope Subbasin is also managed by the Tehama County Flood Control and Conservation District GSA and is being managed to similar undesirable results and minimum threshold conditions to the Los Molinos Subbasin and is unlikely to be adversely affected.
- d. Vina Subbasin: The Vina Subbasin is managed by the Rock Creek Reclamation District GSA and is being managed to similar undesirable results and minimum threshold conditions to the Los Molinos Subbasin and is unlikely to be adversely affected.

5.7 CONSIDERATION OF CLIMATE CHANGE AND FUTURE CONDITIONS

The GSP Regulations require a GSA to consider future conditions and project how future water use may change due to multiple factors including climate change.³⁴²

Since the GSP was adopted and submitted, climate change conditions have advanced faster and more dramatically. It is anticipated that the hotter, drier conditions will result in a loss of 10% of California’s water supply. As California adapts to a hotter, drier climate, GSAs should be preparing for these changing conditions as they work to sustainably manage groundwater within their jurisdictional areas. Specifically, the Department encourages GSAs to:

- Explore how their proposed groundwater level thresholds have been established in consideration of groundwater level conditions in the basin based on current and future drought conditions.

³⁴⁰ Water Code § 10733(c).

³⁴¹ 23 CCR § 354.28(b)(3).

³⁴² 23 CCR § 354.18.

- Explore how groundwater level data from the existing monitoring network will be used to make progress towards sustainable management of the basin given increasing aridification and effects of climate change, such as prolonged drought.
- Take into consideration changes to surface water reliability and that impact on groundwater conditions.
- Evaluate updated watershed studies that may modify assumed frequency and magnitude of recharge projects, if applicable, and
- Continually coordinate with the appropriate groundwater users, including but not limited to domestic well owners and state small water systems, and the appropriate overlying county jurisdictions developing drought plans and establishing local drought task forces to evaluate how their Plan's groundwater management strategy aligns with drought planning, response, and mitigation efforts within the basin.

6 STAFF RECOMMENDATION

Department staff believe sufficient action has been taken by the GSA to address the deficiencies identified. Department staff recommend **APPROVAL** of the Plan with the required and recommended corrective actions listed below. The Plan conforms with Water Code Sections 10727.2 and 10727.4 of SGMA and substantially complies with the GSP Regulations. Implementation of the Plan will likely achieve the sustainability goal for the Los Molinos Subbasin. The GSA has identified several areas for improvement of its Plan and Department staff concur that those items are important and should be addressed as soon as possible. Department staff have also identified additional recommended corrective actions that should be considered by the GSA for the first periodic evaluation of its GSP. Addressing these recommended corrective actions will be important to demonstrate that implementation of the Plan is likely to achieve the sustainability goal. The recommended corrective actions include:

RECOMMENDED CORRECTIVE ACTION 1

The GSA should address the following related to the sustainable management criteria for the chronic lowering of groundwater levels:

- a. Describe how the GSA will track dry wells in a clear and transparent manner. Develop and implement a process for the public to report dry wells if they occur. The GSA should provide a public record of reported dry wells and include reports of dry wells in its annual reports and periodic evaluations.
- b. Provide the criteria used to select tessellation polygons for its definition of undesirable results.³⁴³ The GSA should also provide an explanation for how each

³⁴³ 23 CCR § 354.26(b)(2).

tessellation polygon is representative of beneficial uses and users in the area, specifically how many wells are located within each tessellation hexagon.

RECOMMENDED CORRECTIVE ACTION 2

The GSA should address the following related to the hydrogeologic conceptual model:

- a. Describe the rationale for identifying two principal aquifers, including describing significant differences between the two aquifers or a regional aquitard between them.³⁴⁴ The GSA should, after filling data gaps, identify how interconnected the Upper and Lower Aquifer are, and explain how managing them separately improves the GSA's ability to manage sustainability.
- b. Describe the steps that will be taken to fill data gaps before the next periodic evaluation of the GSP, with a focus on further characterization of the thicknesses and lateral extent of formations in the Subbasin, further evaluation of hydrogeologic parameters in the Subbasin, and further evaluation of interconnectivity between streams and the Upper Aquifer.³⁴⁵

RECOMMENDED CORRECTIVE ACTION 3

The GSA should address the following related to the sustainable management criteria for degraded water quality:

- a. Revise the sustainable management criteria for degraded water quality to include undesirable results for constituents of concern in the Subbasin identified in the GSP.
- b. Revise the description of degraded water quality sustainable management criteria so that groundwater conditions, whether caused by direct actions by the GSA to implement this GSP or not, are considered in the assessment of significant and unreasonable conditions in the Subbasin.
- c. Coordinate with the appropriate groundwater users, including drinking water, environmental, and irrigation users as identified in the Plan, and water quality regulatory agencies and programs in the Subbasin to understand and develop a process for monitoring and determining if groundwater management and extraction is resulting in migration of constituents of concern or degraded water quality in the Subbasin.

RECOMMENDED CORRECTIVE ACTION 4

The GSA should address the following related to the sustainable management criteria for land subsidence:

³⁴⁴ 23 CCR § 354.14(b)(4) *et seq.*

³⁴⁵ 23 CCR § 354.38(d).

- a. Evaluate InSAR data against the proposed thresholds as it is released, which is currently on a quarterly basis, during plan implementation so that it may consider impacts to beneficial uses and users,³⁴⁶ while using the best available science.³⁴⁷
- b. Consider impacts to beneficial uses and users of groundwater, land uses, and property interests³⁴⁸ while establishing the quantitative combination of minimum threshold exceedances that represents an undesirable result.
- c. Set an annual rate and cumulative total amount of subsidence that will lead to undesirable results. Establish minimum thresholds and undesirable results definitions for land subsidence that consider impacts to beneficial uses and users of groundwater, land uses, and property interests³⁴⁹ while using the best available science.³⁵⁰

RECOMMENDED CORRECTIVE ACTION 5

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 GSA should work to address the following items by the first periodic evaluation of the GSP:

- a. Estimate the quantity and timing of depletions of interconnected surface water systems.³⁵¹
- b. Define what constitutes undesirable results for the depletion of interconnected surface water in the Subbasin. Describe the potential effects on the beneficial uses and users of groundwater, or other potential effects that may occur or are occurring from undesirable results.³⁵²
- c. Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.

³⁴⁶ 23 CCR § 354.28(c)(5)(A).

³⁴⁷ 23 CCR § 355.4(b).

³⁴⁸ 23 CCR § 354.28(b)(4).

³⁴⁹ 23 CCR § 354.28(b)(4).

³⁵⁰ 23 CCR § 355.4(b)(1).

³⁵¹ 23 CCR § 354.16(f).

³⁵² 23 CCR § 354.26(b)(3).

- d. 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.
- e. 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 GSA’s jurisdictional area.

RECOMMENDED CORRECTIVE ACTION 6

The GSA should address the following related to the monitoring networks and provide updates on progress in annual reports:

- a. Expand the chronic lowering of groundwater levels monitoring network’s spatial extent for the lower principal aquifer so that it meets the 2024 GSP’s recommended density³⁵³ of six wells in each principal aquifer and to sufficiently monitor impacts to beneficial uses or users of groundwater³⁵⁴ supports the GSA’s ability to understand conditions relative to measurable objectives and minimum thresholds,³⁵⁵ and allows the GSA to quantify water budget components across the Subbasin in all aquifers.³⁵⁶
- b. Expand the degraded water quality monitoring network’s spatial extent for the lower principal aquifer. The GSA should monitor the entire Subbasin so that it sufficiently monitors impacts to beneficial uses or users of groundwater,³⁵⁷ and collects sufficient spatial and temporal data from each principal aquifer to determine groundwater quality trends.³⁵⁸
- c. Update the land subsidence monitoring network using the best available science,³⁵⁹ so that it can identify the rate and extent of land subsidence,³⁶⁰ and monitor for impacts to beneficial uses or users.³⁶¹

³⁵³ 2024 Los Molinos GSP, Section 3.6.2, p. 333.

³⁵⁴ 23 CCR § 354.34(b)(1).

³⁵⁵ 23 CCR 354.34(b)(2).

³⁵⁶ 23 CCR 354.34(b)(3).

³⁵⁷ 23 CCR § 354.34(b)(1).

³⁵⁸ 23 CCR 354.34(c)(4).

³⁵⁹ 23 CCR § 354.4(b)(1).

³⁶⁰ 23 CCR § 354.34(c)(5).

³⁶¹ 23 CCR § 354.34(b)(2).