



CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

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January 13, 2022

Kimball Loeb, Plan Manager
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009
kim.loeb@ventura.org

RE: "Approved" Determination of the 2022 Las Posas Valley Basin Groundwater Sustainability Plan

Dear Kimball Loeb,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP) submitted for the Las Posas Valley Basin 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 Las Posas Valley Basin GSP satisfies the objectives of the Sustainable Groundwater Management Act (SGMA) and substantially complies with the GSP Regulations. The Staff Report also proposes recommended corrective actions that the Department believes will enhance the GSP and facilitate future evaluation by the Department. The Department strongly encourages the recommended corrective actions be given due consideration and suggests incorporating all resulting changes to the GSP in future updates.

Recognizing SGMA sets a long-term horizon for groundwater sustainability agencies (GSAs) to achieve their basin's sustainability goals, monitoring progress is fundamental for successful implementation. GSAs are required to evaluate their GSPs at least every five years and whenever the Plan is amended, and to provide a written assessment to the Department. Accordingly, the Department will evaluate approved GSPs and issue an assessment at least every five years. The Department will initiate the first five-year review of the Las Posas Valley Basin GSP no later than January 13, 2025.

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

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director for Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Approval of the Las Posas Valley Basin Groundwater Sustainability Plan

**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
STATEMENT OF FINDINGS REGARDING THE
APPROVAL OF THE
LAS POSAS VALLEY BASIN GROUNDWATER SUSTAINABILITY PLAN**

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 Sustainable Groundwater Management Act (SGMA or Act), 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 their GSP or impedes achievement of sustainability goals in an adjacent basin. (Water Code § 10733.) The Department is directed to issue an assessment of the Plan within two years of its submission. (Water Code § 10733.4.) This Statement of Findings explains the Department's decision regarding the Plan submitted for the Las Posas Valley Basin (Basin No. 4-008).

Department management has reviewed the Department Staff Report, attached as Exhibit A, recommending approval of the GSP. Based on its review of the Staff Report, Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Plan and concurs with staff's recommendation and all the recommended corrective actions. The Department thus approves the Plan based on the Staff Report and the findings contained herein.

A. The Plan satisfies the required conditions as outlined in § 355.4(a) of the GSP Regulations (23 CCR § 350 et seq.):

1. The Plan was submitted to the Department on January 13, 2020, and thus within the statutory deadline of January 31, 2020. (Water Code § 10720.7(a)(1); 23 CCR § 355.4(a)(1).)
2. The Plan is complete, meaning it includes the information required by the Act and the GSP Regulations sufficient to warrant a thorough evaluation by the Department. (23 CCR § 355.4(a)(2).)
3. The Plan covers the entire Basin. (23 CCR § 355.4(a)(3).)

B. The Plan conforms with Water Code §§ 10727.2 and 10727.4 in the Act and substantially complies with the GSP Regulations. It is likely to achieve the sustainability goal for the Basin. In making this determination, the Department considered the following:

1. The Plan's goal to maintain a sufficient volume of groundwater storage in each management area to avoid significant and unreasonable declines in

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Las Posas Valley Basin (Basin No. 4-008)

groundwater elevation or storage over wet and dry climactic cycles is reasonable and consistent with SGMA and the GSP Regulations. The Plan relies on credible information and science to sufficiently detail the hydrogeologic conceptual model, groundwater conditions, and water budgets for the Basin, which provides a reasonable assessment of overdraft and serves as the sufficient basis for defining and assessing reasonable sustainable management criteria and projects and management actions.

2. The Plan identifies existing data gaps, such as uncertainties in the HCM, potential areas of improvement in the monitoring network, and the limited understanding of the extent and location of hydraulic connectivity between the surface water body and the shallow aquifer; and describes reasonable measures to eliminate identified data gaps. The Department agrees that conducting further investigation to address these data gaps will improve the understanding of the basin hydrogeology and reduce uncertainty. Notwithstanding this, the Department finds that, at this time, the GSP contains a sufficient understanding of the groundwater conditions in the Basin, that the data gaps do not considerably affect GSA's ability to achieve the sustainability goal for the Basin, and that implementation of the Plan during the collection and evaluation of additional information is not likely to cause serious or irreparable harm.
3. The Plan's projects and management action designed to eliminate overdraft by augmenting water supplies and conserving water, if implemented in a reasonable and timely manner, will likely achieve the sustainability goal defined for the Basin.
4. Overall, the Plan provides a sufficiently detailed explanation of how the varied interests of groundwater uses and users in the Basin were considered in developing the sustainable management criteria. At this time, the Department finds that the selected management criteria are likely to improve conditions for environmental uses and other beneficial uses of groundwater by allowing for long-term use of groundwater supplies without ongoing loss of storage.
5. The Las Posas Valley Basin GSP will not adversely impact the ability of the adjacent basins to be operated sustainably and will not impede the adjacent basins' ability to achieve their respective sustainability goals. Fox Canyon Groundwater Management Agency (Agency) took a regional approach to determine the combined sustainable yield of the Basin and adjacent Pleasant Valley Basin and Oxnard Subbasin, and then

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Las Posas Valley Basin (Basin No. 4-008)

determined the sustainable yield for each groundwater subbasin. The minimum thresholds for each respective groundwater sustainability plan were established with consideration for the sustainability goals of the adjacent basins and to operate each groundwater basin within its sustainable yield.

6. The Agency, along with other local agencies have implemented numerous projects and management actions to address groundwater conditions in the Basin. The Agency's legal authority, history of managing groundwater, and plan to utilize its existing infrastructure for projects proposed in the GSP provide a reasonable level of confidence that the Agency, Camrosa Water District-Oxnard Subbasin GSA, and County of Ventura GSA (collectively, the GSAs) have the legal authority and financial resources necessary to implement the Plan.
 7. Through review of the Plan and public comments, the Department determines that the GSAs 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 the recommended corrective actions included in the Staff Report are important to addressing 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.
- C. In addition to the grounds listed above, DWR also finds that:

1. The Plan's compliance with the requirements of SGMA and substantial compliance with the GSP Regulations appears to be consistent with the state policy regarding the human right to water (Water Code § 106.3). The Department developed its GSP Regulations consistent with and intending to further the 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. (23 CCR § 350.4(g))
2. The Plan defines the undesirable result associated with depletion of interconnected surface water in the Las Posas Valley Basin as a loss of groundwater dependent ecosystem (GDE) habitat. The GSP recognizes one potential GDE in one of its management areas (the ELPMA) and aims to maintain groundwater elevation in the Arroyo Simi-Las Posas in order to promote the potential GDE's health. The Department determines that in

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attempting to avoid the further loss of GDE habitat, the GSAs considered public trust resources in development of the Plan.

3. The California Environmental Quality Act (CEQA) does not apply to the Department's evaluation and assessment of the Plan.

Based on the above, the GSP submitted by the Agency for the Las Posas Valley Basin is approved as being found to satisfy the requirements of SGMA and to be in substantial compliance with the GSP Regulations. Recommended corrective actions identified in the Staff Report will assist the Department's review of the Plan's implementation for consistency with SGMA and are thus recommended to be addressed in the GSP by the time of the Department's five-year review, which is set to begin on January 13, 2025, as required by Water Code § 10733.8.

Signed:



Karla Nemeth, Director

Date: January 13, 2022

Enclosure: Groundwater Sustainability Plan Assessment Staff Report – Las Posas Valley Basin

State of California
Department of Water Resources
Sustainable Groundwater Management Program
Groundwater Sustainability Plan Assessment Staff Report

Groundwater Basin Name: Las Posas Valley Basin (Basin No. 4-008)
Submitting Agency: Fox Canyon Groundwater Management Agency, Camrosa Water District, County of Ventura
Recommendation: Approve
Date: January 13, 2022

Fox Canyon Groundwater Management Agency (FCGMA or Agency) Groundwater Sustainability Agency (GSA), Camrosa Water District GSA, and County of Ventura GSA (collectively, the GSAs) submitted the Groundwater Sustainability Plan (GSP or Plan) for the Las Posas Valley Groundwater Basin (Basin) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA).¹ The GSP covers the entire Basin for the implementation of SGMA.

After evaluation and assessment, Department staff find the Las Posas Valley Basin GSP includes the required components of a GSP, demonstrates a thorough understanding of the Basin based on the best available science and information, sets reasonable sustainable management criteria to prevent undesirable results as defined in the Plan, and proposes a set of projects and one management action that will likely achieve the sustainability goal defined for the Basin.² Department staff will continue to monitor and evaluate the Basin's progress toward achieving the sustainability goal through annual reporting and future periodic GSP evaluation. Based on the current evaluation of the Plan, Department staff recommend the GSP be approved with the recommended corrective actions described herein.³

This assessment includes five sections:

¹ Water Code § 10720 *et seq.*

² 23 CCR Section 350 *et seq.*

³ The Department recognizes that litigation, including a comprehensive adjudication of the Basin under Code of Civil Procedure section 830 *et seq.*, has been filed. The filing of litigation does not alter or affect the Department's mandate to issue its assessment of the Agency's groundwater sustainability plan (GSP or Plan) for the basin within two years of its submission. (Water Code §10733.4(d).) The Department's assessment consists of a technical review of the submitted Plan, as required by SGMA and the GSP Regulations, and the filing of the adjudication or other litigation did not in any way influence or affect the Department's evaluation of the Plan. The Department expresses no opinion on the claims of the parties in the pending litigation involving the GSP or the groundwater basin. The role of a GSP in the adjudication process is addressed in Chapter 12 of SGMA (Water Code § 10737 *et seq.*).

- **Section 1 – Summary:** Provides an overview of the basin setting, GSP contents, and overview of the Department’s assessment and recommendations.
- **Section 2 – Evaluation Criteria:** Describes the legislative requirements and the Department’s evaluation criteria.
- **Section 3 – Required Conditions:** Describes the submission requirements, plan completeness, and basin coverage required for a GSP to be evaluated by the Department.
- **Section 4 – Plan Evaluation:** Provides a detailed assessment of the contents included in the GSP organized by each subarticle outlined in the GSP Regulations.
- **Section 5 – Staff Recommendation:** Includes the staff recommendation for the Plan and any recommended or required corrective actions, as applicable.

1 SUMMARY

A single GSP covering the entire Las Posas Basin was submitted to the Department by three GSAs on January 13, 2020. FCGMA is the lead GSA covering the majority of the Basin; all the outlying areas are covered by County of Ventura GSA, and a smaller portion of the Basin is covered by Camrosa Water District GSA.

The Las Posas Basin is in Ventura County within the South Coast Hydrologic Region. The Basin is bounded to the north by South Mountain and Oak Ridge, to the northeast and east by Big Mountain, to the south by the Springville Fault and the Las Posas Hills, and to the west by the Oxnard Subbasin of the Santa Clara River Valley Basin. The GSP of the critically overdrafted Oxnard Subbasin was submitted by its statutory deadline in 2020. A vicinity map showing the Las Posas Basin, adjacent groundwater basins, and GSA boundaries is provided as Figure 1.

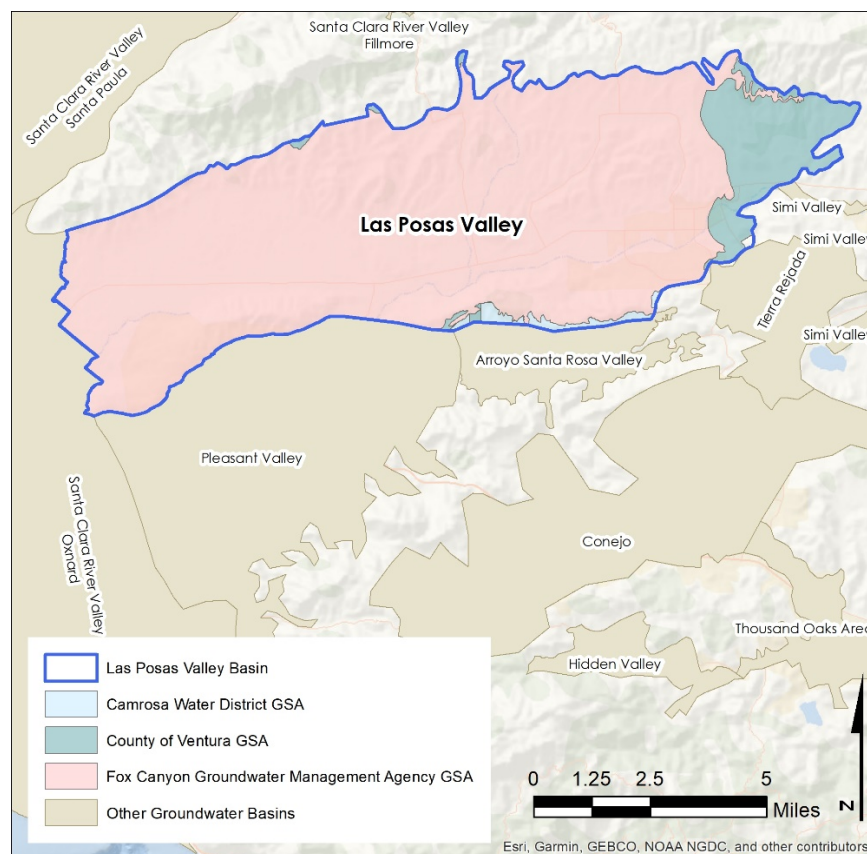


Figure 1: Vicinity Map of the Las Posas Basin including GSA boundaries and adjacent Basins.

Water supply sources in the Basin are surface water, groundwater, recycled/reclaimed water, and imported water. The largest user of groundwater is the agricultural sector, which accounts for about 86 percent of the annual groundwater use. The Basin’s primary

land use is agriculture—covering 51 percent of the land area. The remaining land use is categorized as open space and water, and urban area.

FCGMA has been managing Las Posas Valley groundwater basin by implementing management programs since the Agency was formed by the California Legislature in 1982. Most of these management programs also apply to the three other groundwater basins (Oxnard Subbasin, Pleasant Valley Basin, and Arroyo Santa Rosa Valley Basin as shown in Figure 1) within FCGMA's jurisdiction; however, some management programs only apply to specific areas and may not include Las Posas Valley Basin. As part of FCGMA's management programs, the Agency has already instituted ordinances which require groundwater users to report extraction and pay fees for groundwater use. Furthermore, local agencies such as United Water Conservation District (UWCD) and Calleguas Municipal Water District (CMWD) have implemented water supply projects that have contributed to new water sources in the Basin. The GSP also credits the Agency's history of interagency collaboration to have resulted in the implementation of various conjunctive use programs; which have, in turn, contributed to the groundwater elevation recovery in a part of the Basin during the 1990s. FCGMA intends to continue working collaboratively with these local partners to support existing groundwater management efforts and to implement new projects and a management action to achieve sustainable groundwater management in the Basin.

As described in the GSP, surface water and groundwater monitoring programs are implemented by agencies such as the United States Geological Survey (USGS), Ventura County Watershed Protection District, UWCD, and CMWD. The groundwater quality programs in the Basin are driven by local and state regulatory programs. The data from these monitoring programs and other investigations are used by the Agency to understand the groundwater conditions of the Basin and to develop sustainable management criteria included in the GSP. FCGMA intends to continue to rely on groundwater elevation data collected by the partner agencies to assess the groundwater conditions for GSP annual reports and the 5-year GSP evaluations.

According to the GSP, historical changes in groundwater elevations vary geographically throughout the Basin due to the unique and localized impact of various water supply projects such as surface water delivery programs, Aquifer Storage and Recovery Project, and non-native surface water flows in Arroyo Simi-Las Posas. The impacts of these projects on groundwater elevation were significant enough to subdue the impact of the climatic cycles in some areas. Conversely, groundwater elevations in other areas that are not impacted by these projects have declined during droughts and recovered during wet periods. The impacts of existing projects have also affected groundwater in storage. Due to the variable hydrogeologic and management conditions, the Agency established management areas and adopted basin management approaches specific to each management area.

The sustainability goal for the Basin is “to maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net

decline in groundwater elevation or storage over wet and dry climatic cycles.” The GSP adequately considers its potential impact on the adjacent and hydraulically connected Oxnard Subbasin by intending to maintain groundwater elevations high enough to not inhibit the ability of the Oxnard Subbasin to mitigate seawater intrusion. Furthermore, the GSP of the adjacent Oxnard Subbasin was also developed by FCGMA, demonstrating a regional sustainability approach by which the sustainable management of multiple basins in the region, including Las Posas Basin, can be achieved.

The GSP acknowledges that only one of the Basin’s management areas is in overdraft condition, but the undesirable results caused by chronic lowering of groundwater levels have occurred in all three management areas.⁴ The minimum thresholds for chronic lowering of groundwater levels are established at elevations that aim to limit the groundwater storage decline to less than 20 percent relative to the 2015 groundwater storage and stabilize the groundwater levels in the Basin, thereby limiting seawater intrusion in the adjacent Oxnard Subbasin. The GSP proposes to use groundwater level as a proxy for all applicable sustainability indicators.

The GSP considers implementing three projects and one management action to meet the sustainability goal of the Basin. The projects propose augmenting groundwater storage through actions such as purchasing imported water for basin replenishment, purchasing recycled water for groundwater recharge, and removing invasive plant species along the Arroyo Simi-Las Posas corridor to reduce loss of groundwater by evapotranspiration. The GSP’s proposed management action is to reduce groundwater production. In regards to funding its projects and implementation costs, the Agency anticipates using its existing revenue structure, which includes collecting an extraction fee and a sustainability fee. The GSP, however, recognizes that the current revenue generated from existing fees will not be sufficient to entirely fund the projects. Therefore, the Agency intends to increase the sustainability fee, impose a replenishment fee, and anticipates working with other agencies to identify the most appropriate funding sources for the projects.

Upon review of the GSP, Department staff conclude that the best available science and information were utilized to describe the Plan elements, including the hydrogeological conceptual model (HCM), groundwater conditions, and water budgets. The GSP also includes discussions of data gaps such as uncertainties in the HCM, potential areas of improvement in the monitoring network, and the limited understanding of the extent and location of hydraulic connectivity between the surface water body and the shallow aquifer. Department staff believe that conducting further investigation to address data gaps will improve the understanding of the basin hydrogeology and reduce uncertainty, but staff do not find that this data gap considerably affects the GSA’s ability to achieve the sustainability goal for the Basin.

⁴ It appears to Department staff that the GSP sometime uses the phrase “undesirable results” to describe the adverse condition in the Basin, and not as the term to define significant and unreasonable depletion of supply in the planning and the implementation horizon (Water Code § 10721(x)).”

Department staff believe the GSP's basin management approach to maintain sufficient groundwater storage to avoid undesirable results related to groundwater elevation and storage and to prevent seawater intrusion in the adjacent and hydrologically connected Oxnard Subbasin is reasonable and consistent with SGMA and the GSP Regulations. The GSP provides several paths to sustainability, such as augmenting water supplies and conserving water by implementing projects and management action. The projects included in the GSP appear reasonable, and because the projects will utilize existing infrastructure, they also appear technologically feasible. Since the implementation of projects and management actions are crucial for Basin sustainability, Department staff will track the implementation process and effectiveness of projects and management actions through annual reporting and five-year GSP updates (at a minimum). While the GSAs do not provide implementation details regarding projects and management actions at this time, Department staff find that the overall approach described in the GSP is reasonable, and, if the proposed projects and management actions are implemented in a timely manner, the GSP is likely to achieve the sustainability goal of the Basin.

For the reasons discussed above, Department staff recommend approval of the Las Posas Valley GSP. The GSP identifies several data gaps (e.g., HCM, interconnected surface water, and monitoring networks), which Department staff agree should be addressed. Department staff have also identified additional recommended corrective actions that should be considered by the GSAs for the first periodic evaluation of its GSP (see Section 5). Addressing these recommended corrective actions will be critical for the GSAs to demonstrate, on an ongoing basis, that implementation of the Plan is progressing toward achieving the sustainability goal.

2 EVALUATION CRITERIA

The GSAs submitted a single GSP to the Department to evaluate whether the Plan conforms to SGMA's requirements⁵ and is likely to achieve the sustainability goal for the Las Posas Valley Basin.⁶ To achieve the sustainability goal for the Basin, the GSP must demonstrate that implementation of the Plan 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.⁷ Undesirable results are defined quantitatively by the GSAs.⁸ The Department is also required to evaluate whether the GSP will adversely affect the ability of an adjacent basin to implement its GSP or achieve its sustainability goal.⁹

For the GSP to be evaluated by the Department, it must first be determined that the Plan was submitted by the statutory deadline,¹⁰ and that it is complete and covers the entire basin.¹¹ If these conditions are satisfied, the Department evaluates the Plan to determine whether it complies with SGMA and substantially complies with the GSP Regulations.¹² "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."¹³

When evaluating whether the Plan is likely to achieve the sustainability goal for the Basin, Department staff reviewed the information provided and relied upon in the GSP for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.¹⁴ The Department's review considers whether there is a reasonable relationship between the information provided and the assumptions and conclusions made by the GSA, including whether the interests of the beneficial uses and users of groundwater in the basin have been considered; whether sustainable management criteria and projects and management actions described in the Plan are commensurate with the level of understanding of the basin setting; and whether those projects and management actions are feasible and likely to prevent undesirable results.¹⁵

⁵ Water Code §§ 10727.2, 10727.4.

⁶ Water Code § 10733(a).

⁷ Water Code § 10721(v).

⁸ 23 CCR § 354.26 *et seq.*

⁹ Water Code § 10733(c).

¹⁰ 23 CCR § 355.4(a)(1).

¹¹ 23 CCR §§ 355.4(a)(2), 355.4(a)(3).

¹² 23 CCR § 350 *et seq.*

¹³ 23 CCR § 355.4(b).

¹⁴ 23 CCR § 351(h).

¹⁵ 23 CCR §§ 355.4(b)(1), (3), (4) and (5).

The Department also considers whether the GSA has the legal authority and financial resources necessary to implement the Plan.¹⁶

To the extent overdraft is present in a basin, the Department evaluates whether the Plan provides a reasonable assessment of the overdraft and includes reasonable means to mitigate the overdraft.¹⁷ The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.¹⁸ Lastly, the Department's review considers the comments submitted on the Plan and evaluates whether the GSA adequately responded to the comments that raise credible technical or policy issues with the Plan.¹⁹

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment of the Plan.²⁰ The assessment is required to include a determination of the Plan's status.²¹ The GSP Regulations provide three options for determining the status of a Plan: Approved,²² Incomplete,²³ or Inadequate.²⁴

Even when review indicates that the GSP satisfies the requirements of SGMA and is in substantial compliance with the GSP Regulations, the Department may recommend corrective actions.²⁵ Recommended corrective actions are intended to facilitate progress in achieving the sustainability goal within the basin and the Department's future evaluations, and to allow the Department to better evaluate whether the Plan adversely affects adjacent basins. While the issues addressed by the recommended corrective actions do not, at this time, preclude approval of the Plan, the Department recommends that the issues be addressed to ensure the Plan's implementation continues to be consistent with SGMA and the Department is able to assess progress in achieving the sustainability goal within the basin.²⁶ Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first five-year assessment.²⁷

The staff assessment of the GSP involves the review of information presented by the GSA, including models and assumptions, and an evaluation of that information based on scientific reasonableness. The assessment does not require Department staff to recalculate or reevaluate technical information provided in the Plan or to perform its own geologic or engineering analysis of that information. The staff recommendation to approve a Plan does not signify that Department staff, were they to exercise the professional

¹⁶ 23 CCR § 355.4(b)(9).

¹⁷ 23 CCR § 355.4(b)(6).

¹⁸ 23 CCR § 355.4(b)(2).

¹⁹ 23 CCR § 355.4(b)(10).

²⁰ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²¹ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²² 23 CCR § 355.2(e)(1).

²³ 23 CCR § 355.2(e)(2).

²⁴ 23 CCR § 355.2(e)(3).

²⁵ Water Code § 10733.4(d).

²⁶ Water Code § 10733.8.

²⁷ 23 CCR § 356.4 *et seq.*

judgment required to develop a GSP for the basin, would make the same assumptions and interpretations as those contained in the Plan, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting GSA are supported by adequate, credible evidence, and are scientifically reasonable.

Lastly, the Department's review and approval of the Plan is a continual process. Both SGMA and the GSP Regulations provide the Department with the ongoing authority and duty to review the implementation of the Plan.²⁸ Also, GSAs have an ongoing duty to reassess their plans, provide reports to the Department, and, when necessary, update or amend their plans.²⁹ The passage of time or new information may make what is reasonable and feasible at the time of this review to not be so in the future. The emphasis of the Department's periodic reviews will be to assess the progress toward achieving the sustainability goal for the basin and whether Plan implementation adversely affects the ability of adjacent basins to achieve their sustainability goals.

²⁸ Water Code § 10733.8; 23 CCR § 355.6 *et seq.*

²⁹ Water Code §§ 10728 *et seq.*, 10728.2.

3 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline. The Plan must also be complete and must, either on its own or in coordination with other Plans, cover the entire basin. If corrective actions have been identified by the Department, as described in Section 355.2 of the GSP Regulations, the GSA must also have taken those corrective actions within the period of time provided.

3.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority as of January 1, 2017 to submit a GSP no later than January 31, 2022.³⁰

The GSAs submitted its Plan on January 13, 2020, in compliance with the statutory deadline.

3.2 COMPLETENESS

GSP Regulations specify that the Department shall evaluate a GSP if that GSP is complete and includes the information required by SGMA and the GSP Regulations.³¹

The GSAs submitted an adopted GSP for the entire Basin. Department staff found the GSP to be complete and include the required information, sufficient to warrant an evaluation by the Department. The Department posted the GSP to its website on January 31, 2020.

3.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.³² A GSP that intends to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting GSA(s).

The GSP intends to manage the entire Basin and the jurisdictional boundaries of the submitting GSA(s) cover the entire Las Posas Valley Basin.³³

³⁰ Water Code § 10720.7(a)(1).

³¹ 23 CCR § 355.4(a)(2).

³² Water Code § 10727(b); 23 CCR § 355.4(a)(3).

³³ Las Posas Valley Basin GSP, Section 1.1, p. 31.

4 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 staff’s evaluation of the likelihood of the Plan to attain the sustainability goal for the Basin is provided below.

4.1 ADMINISTRATIVE INFORMATION

The GSP Regulations require each Plan to include administrative information identifying the submitting agency, describing the plan area, and demonstrating the legal authority and ability of the submitting agency to develop and implement a plan for that area.³⁴

4.1.1 Evaluation Summary

The administrative information included in the GSP substantially complies with the requirements outlined in the GSP Regulations. The Plan describes in sufficient detail the authority of the three GSAs to manage groundwater within the Basin. The GSP provides detailed information on the various water resources management programs, monitoring programs, conjunctive-use programs, regulatory programs, urban water management plans, and general plans that are relevant to sustainable groundwater management. Based on the information provided on the history of groundwater management in the Basin and the Agency’s ongoing collaboration with local agencies to implement various water resources projects, Department staff believe that FCGMA, along with County of Ventura GSA, and Camrosa Water District GSA will likely continue to manage groundwater in the Basin to meet its sustainability goal.

The GSP describes historical, current, and projected land use and the main sources of water in the Basin. The Plan provides information on the different groups of beneficial users of groundwater in the Basin, their participation in the GSP development process, and the revisions made to the GSP based on inputs received from the interested parties and partner agencies.

4.1.2 Agency Information

Three local governmental agencies—FCGMA, Camrosa Water District, and the County of Ventura—formed three GSAs to cover the Pleasant Valley Basin. FCGMA led the GSP development effort in the Basin. The jurisdictional boundary of FCGMA covers 89 percent of the Basin’s geographical area and is based on the vertical projection of the Fox Canyon aquifer, which is one of the primary aquifers in the region. The Basin areas that are outside the jurisdictional boundary of FCGMA are covered by the County of Ventura GSA and Camrosa Water District GSA. The County of Ventura GSA covers about 10 percent of the Basin area and the Camrosa Water District GSA covers about one percent of the

³⁴ 23 CCR § 354.2 *et seq.*

Basin area. The GSAs completed and submitted a single GSP for the Basin. The GSP includes agency information, and organization, and management structure of FCGMA.³⁵

FCGMA has been managing groundwater in the Basin since the Agency was formed as a special district in 1982, and it is one of the agencies specifically permitted by SGMA to become the exclusive GSA within its statutory boundary.³⁶ In addition to working in coordination with other agencies with water supply responsibilities, FCGMA's groundwater management activities include oversight of programs such as groundwater extraction reporting and allocation program, extraction limitations, extraction surcharges, and prohibition of the export of groundwater.³⁷

The GSP discusses the types of costs associated with GSP implementation and the sources of funding to meet these costs. The GSP implementation costs consist of costs associated with basic operation and monitoring, periodic evaluations and reporting, and projects.³⁸ The Agency currently collects a groundwater extraction fee to fund its basic operations. The Agency also collects a sustainability fee, which it plans to increase in order to generate additional revenue to cover the GSP implementation costs and a portion of the project costs. The Agency proposes to implement a replenishment fee to cover these costs as well. The GSP estimates an annual cost of \$5,486,968 to cover the project and water supply costs for the first 5 years.³⁹ The Agency also developed the GSPs for the adjacent Pleasant Valley Basin and Oxnard Subbasin, therefore the Los Posas GSP provides the combined implementation cost for all three groundwater basins. Collectively, the implementation cost for all three basins is estimated to be \$79,302,272 for the period of 2020 through 2040.⁴⁰ Because of the legal authority and past groundwater management efforts made by FCGMA and the new authority acquired by the GSAs under SGMA, Department staff believe that the GSAs have the ability to generate financial resources to implement the GSP.

4.1.3 Description of Plan Area

The GSP shows that agriculture covers 51 percent of the Basin's acreage, open surface and water cover 26 percent of the acreage, and the urban area covers 23 percent of the acreage.⁴¹ The City of Moorpark overlies the Basin, which covers 15.5% of the Basin. The City of Camarillo lies outside the basin boundary; however, the City of Camarillo's northwestern edge is crossed by the basin boundary.

Water supplies for the Basin consist of locally pumped groundwater, diverted surface water, imported water, and recycled water. The diverted surface water from Conejo Creek is used for non-potable applications, such as for agricultural use. Imported water includes

³⁵ Las Posas Valley GSP, Section 1.2, p. 32.

³⁶ Water Code § 10723(c)(1)(D).

³⁷ Las Posas Valley GSP, Table 1-12, pp. 81-82.

³⁸ Las Posas Valley GSP, Section 1.2.6, pp. 34-40, Sections 5.2-5.5, pp. 428-439.

³⁹ Las Posas Valley GSP, Table 1-1, p. 71.

⁴⁰ Las Posas Valley GSP, Table 1-2, p. 71.

⁴¹ Las Posas Valley GSP, Table 1-9, p. 76.

water from State Water Project and/or Colorado River, as well as groundwater from other groundwater basins. Recycled water produced by the Moorpark wastewater treatment plant is used by the municipal and industrial sectors.

The water use sectors that utilize groundwater are identified as agricultural, municipal and industrial, and domestic. Agriculture is the main water use sector, which appears to account for approximately 86.2 percent (30,278 acre-feet annual average) of the annual groundwater use in the Basin.⁴² The second highest use of groundwater is the municipal and industrial sector, which appears to account for approximately 13.7 percent (4,816 acre-feet annual average) of the groundwater annually pumped in the Basin.⁴³ The groundwater use by the domestic sector is the lowest, appears to account for less than half a percent (51 acre-feet annual average) of the annually pumped groundwater.⁴⁴

Various agencies administer the existing monitoring programs pertaining to groundwater levels, groundwater quality, surface water quality, stormwater quality, precipitation, and streamflow.⁴⁵ Few of the existing monitoring programs are overseen by FCGMA. However, FCGMA collects and analyzes data for annual groundwater extraction and analyzes water quality data to track the progress toward meeting Basin Management Objectives. The GSP includes a list of existing groundwater management programs that operate in the Basin.⁴⁶ The programs include aquifer storage and recovery, water conservation, expansion area protection (protection of recharge area), prohibition of groundwater export, wastewater recycling, extraction limitation, collecting extraction fees and reporting, water credit transfers, salinity management, and imported water.

The GSP describes how the existing urban water management plans (for the City of Camarillo, Calleguas Municipal Water District, and Ventura County Waterworks District No. 1) may affect sustainable groundwater management within the Basin and how the GSP may impact the assumptions of these UWMP.⁴⁷ The GSP also provides descriptions of existing conjunctive use programs and Ventura County's general plan.⁴⁸ The Agency is planning to coordinate with the County on the next update of the general plan to ensure that the GSP and the general plan update are mutually consistent.⁴⁹

4.1.4 Notice and Communication

The GSP sufficiently describes the notification and communication efforts made by the Agency during GSP development and includes a Public Outreach and Engagement Plan.⁵⁰ The GSP provides a summary of all the beneficial users and uses groups, which

⁴² Las Posas Valley GSP, Tables 2-13 and 2-14, pp. 199-200.

⁴³ Las Posas Valley GSP, Tables 2-13 and 2-14, pp. 199-200.

⁴⁴ Las Posas Valley GSP, Tables 2-13 and 2-14, pp. 199-200.

⁴⁵ Las Posas Valley GSP, Tables 1-11, p. 79.

⁴⁶ Las Posas Valley GSP, Tables 1-12, pp. 80-82.

⁴⁷ Las Posas Valley GSP, Section 1.6, pp. 52-60.

⁴⁸ Las Posas Valley GSP, Sections 1.5-1.6.1, pp. 51-56.

⁴⁹ Las Posas Valley GSP, Section 1.6, pp. 54-56.

⁵⁰ Las Posas Valley GSP, Appendix B, pp. 605-630.

include municipal well operators, water purveyors, agricultural, domestic, and environmental users, and disadvantaged communities.⁵¹

The GSP states that most of these interested parties, along with agricultural groups, have direct representation through membership on the FCGMA Board. Although environmental users and the disadvantaged communities do not have direct representation on the Agency board, according to the GSP, they had various opportunities to participate in the GSP development process. For example, environmental user interests were represented through the appointment of an environmental representative on the Technical Advisory Group (TAG). Disadvantaged communities were represented by the City of Moorpark. The FCGMA board includes a member representing each of the five incorporated cities, including City of Moorpark.

To facilitate engagement with the public, the Agency conducted five public workshops between 2015 and 2019 and hosted numerous public meetings,⁵² including a special TAG meeting to discuss potential groundwater dependent ecosystems (GDEs).⁵³ The Agency also conducted a survey to receive input on sustainability indicators; hosted a public call for project ideas for incorporation in the GSP; circulated electronic newsletters to interested parties on a periodic basis; and regularly posted updates on the Agency website. The Agency intends to use the same tools of communication during GSP implementation that were used during GSP development. The additional details on opportunities for public engagement, outreach activities, collaboration efforts, and communication with interested parties are provided in the GSP.⁵⁴

The GSP describes that, in consideration of some of the written comments received, the Agency performed additional work and analysis during GSP development, such as an independent peer review of the numerical groundwater models, further analysis for the water quality considerations.⁵⁵ The Agency also extended the timeline for completion of the GSP to facilitate additional outreach and engagement.⁵⁶ Department staff believe that the Agency's engagement and outreach efforts during the GSP development process were adequate, and thus the Agency's plan to continue with the same tools of engagement and outreach during Plan implementation is a reasonable approach. Therefore, Department staff conclude that the GSP substantially complies with all elements of the Notice and Communication section of the GSP Regulations.

4.2 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

⁵¹ Las Posas Valley GSP, Section 1.8.2, pp. 62-64.

⁵² Las Posas Valley GSP, Tables 1-13, pp. 83-86.

⁵³ Las Posas Valley GSP, Section 1.8.2, p. 63.

⁵⁴ Las Posas Valley GSP, Appendix B, pp. 605-630.

⁵⁵ Las Posas Valley GSP, Section 1.8.4, pp. 64-65.

⁵⁶ Las Posas Valley GSP, Section 1.8.4, pp. 64-65.

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.⁵⁷

4.2.1 Evaluation Summary

The basin setting description included in the GSP is sufficiently detailed and substantially complies with the requirements outlined in the GSP Regulations. The discussion of hydrogeological setting, groundwater conditions, and water budget appear to be based on the best available information and the best available science. The technical details in the basin setting appear adequate to develop and implement a GSP for sustainable groundwater management.

The HCM is based on data and information collected by the Agency and from previous studies conducted in the Basin. All relevant hydrologic and hydrogeologic processes appear to have been incorporated in the HCM. The GSP identifies the data gaps in the HCM and acknowledges the uncertainty in understanding the impact of water level changes on change in storage.⁵⁸ The data gaps identified in the HCM are aquifer-specific data for groundwater level and quality, the leakage between the Upper San Pedro Formation and underlying Fox Canyon aquifer, and the connectivity between water-bearing zones within the Upper San Pedro Formation.⁵⁹ The GSP discusses techniques to eliminate these data gaps, which it claims will reduce the uncertainties in HCM.

The Agency's approach of developing separate water budgets for two management areas is scientifically reasonable. Both water budgets include assessments of historical, current, and projected conditions and are based on numerical models. The water budgets were used to estimate the change in storage and sustainable yield for each management area. Department staff believe that the water budget components provided in the GSP were developed using the best available tools and information available at the time the GSP was prepared and substantially comply with the requirements outlined in the GSP Regulations. Based on the information provided for the basin setting, Department staff find that the Agency's understanding of the hydrogeology and groundwater conditions of the Basin is satisfactory and the basin setting section substantially complies with the GSP Regulations.

4.2.2 Management Areas

The Basin is divided into three management areas: West Las Posas Management Area (WLPMA), East Las Posas Management Area (ELPMA), and Epworth Gravels Management Area.⁶⁰ The WLPMA and ELPMA are separated by a fault that limits the hydraulic communication between the management areas, causing a significant difference (over 300 feet) in groundwater elevation across the fault.⁶¹ Among the three

⁵⁷ 23 CCR § 354.12 *et seq.*

⁵⁸ Las Posas Valley GSP, Section 2.2.5, p. 115.

⁵⁹ Las Posas Valley GSP, Section 2.2.5, p. 115.

⁶⁰ Las Posas Valley GSP, Section 2.5, p. 175.

⁶¹ Las Posas Valley GSP, Section 2.5, p. 175.

management areas, only WLPMA is hydraulically connected with the adjacent Oxnard Subbasin, which is a critically overdrafted basin.⁶² The GSP states that the primary sources of recharge differ between the WLPMA and the ELPMA. The Epworth Gravels Management Area is defined by the areal extent of the Epworth Gravels aquifer—a small (2.5-square mile) aquifer that is hydraulically disconnected from other aquifers.⁶³ The GSP states that the Epworth Gravels aquifer is locally a significant source of water that, because of its geologic separation from other aquifers, needs to be managed independently.

Due to these differences in hydrogeological conditions, the Agency established unique sets of sustainable management criteria so that the groundwater in each management area can be managed based on the local hydrogeologic conditions. Additionally, the Agency intends to implement different projects and management actions in each management area to address the unique hydrogeologic conditions in each.

4.2.3 Hydrogeologic Conceptual Model

The HCM provided in the GSP adequately describes the Agency's understanding of the geographic setting, geologic setting, structural setting, and other physical attributes of the Basin, its aquifers, and aquitards. The HCM uses cross-sections⁶⁴ to clearly describe the lateral boundaries of the Basin, bottom of the basin, and the basin geometry, and includes written descriptions of the physical and structural properties of the Basin. The GSP provides various maps showing surficial geology, impaired surface water bodies, stream gauges, water infrastructure, and other supporting information to comprehensively describe the hydrogeologic conceptual model, which complies with the GSP Regulations.

The GSP identifies five hydrostratigraphic units in the Basin, which are the shallow alluvial aquifer (as referred to in the ELPMA) or shallow aquifer system (as referred to in the WLPMA), Epworth Gravels aquifer, Upper San Pedro Formation, Fox Canyon aquifer, and Grimes Canyon aquifer.⁶⁵ The Plan refers to the four lower hydrostratigraphic units (Epworth Gravels aquifer, Upper San Pedro Formation, Fox Canyon aquifer, and Grimes Canyon aquifer) as the Lower Aquifer System (LAS). The Epworth Gravels aquifer is a localized aquifer that is only present in a small area.⁶⁶ The Upper San Pedro Formation functions as a leaky aquitard and is not considered an aquifer because the water-producing units are discontinuous and not well connected.⁶⁷ The Fox Canyon aquifer is identified as the primary aquifer in the Basin, and the Grimes Canyon aquifer is identified as an important source of water where the Fox Canyon aquifer thins out or is unsaturated.⁶⁸

⁶² Las Posas Valley GSP, Section 2.4.5.1, p. 156.

⁶³ Las Posas Valley GSP, Section 2.5, p. 175.

⁶⁴ Las Posas Valley GSP, Figures 2.3 and 2.4, pp. 207 and 209.

⁶⁵ Las Posas Valley GSP, Section 2.2, p. 104, Table 2-1, p. 181.

⁶⁶ Las Posas Valley GSP, Section 2.2.4, p. 112.

⁶⁷ Las Posas Valley GSP, Section 2.2.4, p. 113.

⁶⁸ Las Posas Valley GSP, Section 2.2.4, p. 115.

The GSP states that the shallow alluvial aquifer is hydraulically connected to the LAS and works as a conduit to recharge the LAS via vertical leakage. However, relative to the total groundwater production of the Basin, there are fewer wells that produce water from the shallow alluvial aquifer.⁶⁹ According to the GSP, this is likely a result of marginal-quality water and low well yields. Although the GSP identifies the beneficial uses of groundwater in two aquifers, it does not specify the primary uses or users of any specific aquifer due to most wells being screened across multiple aquifers.

The Arroyo Simi-Las Posas is the only perennial stream that recharges the Basin. Streamflow during dry conditions is produced by non-native sources from the Simi Valley area, which is located immediately upstream of the Basin.⁷⁰ The Arroyo Simi-Las Posas receives treated wastewater produced by Moorpark Wastewater Treatment Plant and Simi Valley Water Quality Control Plant and pumped groundwater from Simi Valley dewatering wells.⁷¹ The GSP identifies the potential recharge areas, which are primarily located in the eastern part of the Basin, along Arroyo Simi-Las Posas and other small drainages.⁷²

The GSP identifies data gaps in the HCM as uncertainties associated with aquifer-specific data, the volume of leakage between the Upper San Pedro Formation and the underlying Fox Canyon aquifer, and the connectivity between the water-bearing units within the Upper San Pedro Formation.⁷³ The Agency discussed throughout the GSP that most of these uncertainties are due to the limited number of wells screened solely in a single aquifer.⁷⁴ Despite the uncertainties caused by limited data availability in some aspects of the HCM, Department staff find the Agency has decades of historical data and data from current monitoring networks to rely on and uses the best available information. Furthermore, Department staff believe the Agency demonstrates a good understanding of the Basin setting, including the geology and groundwater conditions of the Basin, and find the HCM described in the GSP is generally consistent with the Department's understanding of the Basin and with previous studies done in the area.

4.2.4 Groundwater Conditions

The GSP states that groundwater elevations in the Basin have been affected by climate cycles, surface water delivery programs, Aquifer Storage and Recovery Project, and non-native surface water flows in Arroyo Simi-Las Posas. These effects are local and unique to each management area.⁷⁵ The GSP includes a summary of current (2015 according to GSP) and historical (before 2015, according to GSP) groundwater elevation trends for

⁶⁹ Las Posas Valley GSP, Section 2.2.4, p. 112.

⁷⁰ Las Posas Valley GSP, Section 2.4.1, pp. 141-142.

⁷¹ Las Posas Valley GSP, Section 2.4.1, pp. 141-142.

⁷² Las Posas Valley GSP, Section 2.3.8, p. 140, Figure 2-40, p. 291.

⁷³ Las Posas Valley GSP, Section 2.2.5, p. 115.

⁷⁴ Las Posas Valley GSP, Sections 2.3.1 and 2.4.4, pp. 116 and 155.

⁷⁵ Las Posas Valley GSP, Section 2.3.1, pp. 116-128.

each management area along with the groundwater elevation contour maps and aquifer-specific hydrographs. The GSP states that not all aquifers have sufficient data to analyze groundwater elevation trends and gradients.⁷⁶

Groundwater elevation trends in the Basin vary with geographic location; therefore, the GSP provides a separate discussion for each representative area. In the WLPMA, the groundwater elevation trends in the western part of the management area, adjacent to the Oxnard Subbasin, are different from the groundwater elevation trend in the eastern part of the management area. In the western part, groundwater elevations in the Fox Canyon aquifer have declined and recovered over climatic cycles and also have been impacted by the groundwater recharge in the adjacent Oxnard Subbasin.⁷⁷ The groundwater elevation in the Fox Canyon aquifer declined between 1984 and 1990, and between 2011 and 2016, which coincide with periods of droughts. The GSP states that the groundwater elevation recovery after the 1984-1990 drought is likely due to several wet years, the influence of management actions, and construction of water conservation facilities.⁷⁸ In the eastern part of the WLPMA, groundwater elevations in the Fox Canyon aquifer were primarily influenced by in-lieu use of surface water and not correlated with climatic cycles.⁷⁹ During 1950-1991, groundwater elevations declined despite a prolonged period of above-average precipitation and recovered during 1995-2008 because of in-lieu use of surface water.⁸⁰ The GSP states that since the in-lieu deliveries stopped in 2008, groundwater elevations have declined significantly, approaching the historical low.⁸¹

In the WLPMA, the groundwater elevation trends in the Grimes Canyon aquifer vary with location. The groundwater elevations of the wells near the Forebay area (of Oxnard Subbasin) are likely influenced by surface water spreading in the recharge basin and declined during 1986-1991, coincident with a period of drought.⁸² In other parts of the WLPMA, the groundwater elevations were either stable or improved prior to 2011 but they started to decline in 2011, the beginning of a significant drought period.

The GSP states that there is only one well in the ELPMA with a long-term record of groundwater elevations in the shallow alluvial aquifer. The groundwater elevations in this well rose between 1977 and 1995 as non-native perennial flows recharged the aquifer and were relatively stable between 1995 and 2002.⁸³ The groundwater elevation in Epworth Gravels aquifer declined between 1980 and 1992, and in response to this decline, new wells constructed at that time were deeper and screened in the underlying

⁷⁶ Las Posas Valley GSP, Section 2.3.1, p. 117.

⁷⁷ Las Posas Valley GSP, Section 2.3.1.1.2, p. 119.

⁷⁸ Las Posas Valley GSP, Section 2.3.1.1.2, p. 120.

⁷⁹ Las Posas Valley GSP, Section 2.3.1.1.2, pp. 119-120.

⁸⁰ Las Posas Valley GSP, Section 2.3.1.1.2, p. 120.

⁸¹ Las Posas Valley GSP, Section 2.3.1.1.2, p. 120.

⁸² Las Posas Valley GSP, Section 2.3.1.1.3, p. 121.

⁸³ Las Posas Valley GSP, Section 2.3.1.2.1, p. 122.

Fox Canyon aquifer.⁸⁴ Between 1992 to 2010, groundwater levels recovered but declined again between 2010 and 2015.⁸⁵

The GSP states that groundwater elevations and trends in the Fox Canyon aquifer vary geographically within the ELPMA. Historically, groundwater elevations in wells near Arroyo Simi-Las Posas recovered and declined in response to non-native surface water availability in Arroyo Simi-Las Posas, which recharges the Fox Canyon aquifer.⁸⁶ Near the Aquifer Storage & Recovery well field, the groundwater elevation declined in response to groundwater production from the Aquifer Storage & Recovery wells. The groundwater elevations recovered when water was injected through wells and have remained stable.⁸⁷ The GSP states that there are no wells screened solely in the Grimes Canyon aquifer in the ELPMA.⁸⁸

The vertical gradients within all aquifers are mostly directed downward.⁸⁹ There are some areas within aquifers where the vertical gradients are either upward or unknown. There is an upward vertical gradient documented in some aquifers within the ELPMA. The vertical gradient is directed upwards from the Upper San Pedro Formation to the shallow alluvial aquifer in the fall of 2015 and from the Fox Canyon aquifer to the Upper San Pedro Formation in the spring of 2015. The direction of vertical gradient between the Fox Canyon aquifer and the Grimes Canyon aquifer is unknown because of the lack of groundwater level data (in the WLPMA) and the lack of wells screened solely in the Grimes Canyon aquifer (in the ELPMA).

The GSP used a groundwater model prepared by UWCD to estimate the change in storage in the WLPMA and another groundwater model prepared by CMWD to estimate the change in storage in the ELPMA. The change in storage was calculated for water years 1986 to 2015 for the WLPMA and for water years 1985 to 2015 for the ELPMA. The average change in storage was a loss of approximately 2,300 acre-feet per year in the WLPMA.⁹⁰ However, the average annual change in storage in the ELPMA was an increase of approximately 3,600 acre-feet per year.⁹¹

The Las Posas Valley Basin is about nine miles from the coast and approximately six to seven miles inland of the 2015 extent of seawater intrusion in the adjacent Oxnard Subbasin⁹² Therefore, seawater intrusion is not currently a problem for the Las Posas Valley Basin.⁹³ The GSP states that both the Oxnard Subbasin and Las Posas Valley Basin are managed by FCGMA, which has set sustainable management criteria in this

⁸⁴ Las Posas Valley GSP, Section 2.3.1.2.2, pp. 122-123.

⁸⁵ Las Posas Valley GSP, Section 2.3.1.2.2, pp. 122-123.

⁸⁶ Las Posas Valley GSP, Section 2.3.1.2.4, pp. 126-127.

⁸⁷ Las Posas Valley GSP, Section 2.3.1.2.5, p. 128.

⁸⁸ Las Posas Valley GSP, Section 2.3.1.2.5, p. 128.

⁸⁹ Las Posas Valley GSP, Section 2.3.1, pp. 116-128.

⁹⁰ Las Posas Valley GSP, Section 2.3.2, pp.128-129.

⁹¹ Las Posas Valley GSP, Section 2.3.2, pp.128-129.

⁹² Las Posas Valley GSP, Section 2.3.3, p.130.

⁹³ Las Posas Valley GSP, Section 2.3.3, p.130.

GSP to limit the seawater intrusion in the Oxnard Subbasin. Therefore, FCGMA does not anticipate seawater intrusion to occur in the future.⁹⁴

The GSP discusses in detail five constituents of concern that are present at elevated concentrations throughout the Basin—total dissolved solids (TDS), chloride, nitrate, sulfate, and boron.⁹⁵ The Plan describes that non-native discharges to Arroyo Simi-Las Posas are likely the cause of elevated concentrations of all water quality constituents (with an exception of nitrate) in the ELPMA. The GSP includes a series of water quality concentration maps that show higher concentrations of TDS near the boundary of Oxnard Subbasin, a higher concentration of chloride in wells near the Arroyo Simi-Las Posas, and a higher concentration of boron and sulfate near the boundary of the Oxnard Subbasin and in wells located in the vicinity of the Arroyo Simi-Las Posas.⁹⁶ The Agency has been conducting water quality monitoring and tracking the trends of these constituents of concern by comparing the result of the monitoring with FCGMA's Basin Management Objective and the Los Angeles Regional Water Quality Control Board's (LARWQCB) Water Quality Objectives. Furthermore, FCGMA reviewed active contamination cases in GeoTracker and EnviroStor websites and concluded that no open cases with impacted groundwater were identified in the Basin. Based on this finding, the GSP concludes that existing groundwater contamination related to contaminated sites do not pose a substantial threat to the beneficial use of groundwater in the Basin.⁹⁷

The GSP identifies groundwater pumping as one of three possible causes of land subsidence in the Basin. The other causes of land subsidence are identified as petroleum reservoir compaction and tectonic forces. The GSP states that two monuments measure subsidence in the Basin. One is located near the foothills, and another is located near the western boundary of the Basin. The monument located near the foothills showed no measurable subsidence since it was installed in 2000, and the monument near the western boundary showed three inches of subsidence since it was installed in 2007. The GSP acknowledges that the majority of the subsidence has occurred since 2012, which coincides with a period of drought and with reduced groundwater recharge in the adjacent Oxnard Subbasin. A study cited in the GSP shows that during 2015-2016, about one inch of subsidence occurred in the Basin.⁹⁸ Department staff find the Plan's discussion of the rate of historical subsidence, based on observed data, to be reasonable, but staff are unclear about the current extent of subsidence in the Basin. See the discussion below in Section 4.3.3.5.

⁹⁴ Las Posas Valley GSP, Section 2.3.3, p. 130.

⁹⁵ Las Posas Valley GSP, Section 2.3.4, pp. 130-136.

⁹⁶ Las Posas Valley GSP, Figures 2-30A through 2-34B, pp. 261-279.

⁹⁷ Las Posas Valley GSP, Section 2.3.4.6, p. 136.

⁹⁸ Farr, T.G., C.E. Jones, and Z. Liu. 2017. "Progress Report: Subsidence in California, March 2015–September 2016." California Institute of Technology, Jet Propulsion Laboratory.
<https://cawaterlibrary.net/wp-content/uploads/2017/05/JPL-subsidence-report-final-for-public-dec-2016.pdf>

The GSP states that Arroyo Simi-Las Posas, which runs through the ELPMA, may have a connection to groundwater.⁹⁹ The Plan provides data that implies that the stream is connected to the underlying aquifer.¹⁰⁰ The GSP states that the estimated loss of water from Arroyo Simi-Las Posas to groundwater is approximately 10,187 acre-feet per year¹⁰¹ and briefly discusses a study regarding gaining and losing sections of the stream. However, the GSP does not discuss the quantity and timing of depletion. Identifying the location of interconnected surface water and evaluating the quantity and timing of depletions are important to understand and successfully manage depletions of the surface water in the Basin (see Recommended Corrective Action 1).

The GSP has identified Arroyo Simi-Las Posas as a potential GDE based on The Nature Conservancy statewide potential GDE dataset. The Plan states that Arroyo Simi-Las Posas provides habitat for state and federally listed endangered birds, federally threatened birds, and other native species. A GDE map included in the GSP shows the distribution of potential GDEs within the Basin based on the Nature Conservancy's Natural Communities Commonly Associated with Groundwater (NCCAG) dataset.¹⁰² The GSP states that historical aerial photographs show that there was no vegetation along the Arroyo Simi-Las Posas before 1970, and the stream was dry.¹⁰³ Stream flow has been perennial since the 1970s, and dry weather flow in the stream originates as discharge from non-native sources.¹⁰⁴ The GSP states that non-native streamflow and recharge to the underlying shallow alluvial aquifer are anticipated to decrease in the future, which may negatively impact the potential GDEs. The GSP further states that such changes are unrelated to groundwater production and are outside the jurisdictional powers of FCGMA to prevent. The Plan acknowledges that monitoring the groundwater level in the potential GDE area could help to assess the reliance of existing habitat on groundwater under native flow conditions.¹⁰⁵ Department staff agree with the GSP's acknowledgment and recommend the Agency monitor shallow groundwater near potential GDEs that will help identify GDEs and their reliance on the native flow (see Recommended Corrective Action 1).

Despite the data gap and minor deficiency discussed above, the description of groundwater conditions provided in the Plan shows the Agency's thorough understanding of the historical and current conditions of the Basin. Furthermore, based on information provided in the GSP, Department staff believe that the best available information and science were utilized to develop an understanding of the groundwater conditions, and this understanding serves as the basis for developing sustainable management criteria.

⁹⁹ Las Posas Valley GSP, Section 2.3.6.2, p. 137.

¹⁰⁰ Las Posas Valley GSP, Appendix C: CMWD Model Report, pp. 631-898.

¹⁰¹ Las Posas Valley GSP, Section 2.3.6.2, p. 138.

¹⁰² Las Posas Valley GSP, Figure 2-38, p. 287.

¹⁰³ Las Posas Valley GSP, Section 2.3.7, p. 138.

¹⁰⁴ Las Posas Valley GSP, Section 2.3.7, pp. 137-138.

¹⁰⁵ Las Posas Valley GSP, Section 2.3.7, p. 139.

4.2.5 Water Budgets

The Agency prepared separate water budgets for the WLPMA and ELPMA. The water budget for WLPMA is based on the Ventura Regional Groundwater Flow Model created by the UWCD for the western part of the Las Posas Valley Basin, Oxnard Subbasin, Mound Basin, and Pleasant Valley Basin.¹⁰⁶ The water budget for the ELPMA is based on the Groundwater Flow Model created by the CMWD. Both groundwater models are based on the USGS numerical groundwater flow model (MODFLOW). The GSP states that both models were revised, peer reviewed, and finalized in 2018 for the Las Posas GSP¹⁰⁷ and were used to estimate historical, current, and projected water budgets and the sustainable yield. Department staff find that the use of two different groundwater flow models is justified because the management areas have unique hydrogeologic conditions and are defined based on scientifically reasonable approaches.

The GSP provides detailed descriptions of the sources of water in the Basin, including recycled and imported water, and sources of discharge. The Plan uses the hydrologic base period of 1985 to 2015 for the water budget calculation. The year 2015 is referred to as the current condition and the base period prior to 2015 is referred to as historical conditions.¹⁰⁸ The GSP includes a single water budget for the ELPMA,¹⁰⁹ and two water budgets for the WLPMA—one for the shallow aquifer and one for the LAS.¹¹⁰ The Plan also includes additional data pertaining to the water budget components, such as a summary of recycled water, imported water deliveries, detailed accounting of recharge by source type, and groundwater use by beneficial uses for each aquifer system, as required by the GSP Regulations.

The GSP quantifies overdraft for the WLPMA and includes estimates of change in storage for the ELPMA and the Epworth Gravels Management Area, which show that these two management areas are not in overdraft. The calculation of overdraft and change in storage were based on an average water year type in which water supply conditions approximated average conditions. This calculation method excluded wet, dry, and critically dry water year types. Since the GSP uses the change in storage data from the water years with approximated average conditions for the overdraft calculation, Department staff regard the GSP's approach to be consistent with the GSP Regulations section 354.18(b)(5). Furthermore, the method of overdraft calculation also aligns with the definition of "condition of long-term overdraft" as defined under water code section 10735 (a) because the GSP uses a base period of 30 years for water budget calculations, which is longer than the 10-year minimum base period required by the water code. The GSP estimates that the overdraft in the WLPMA was about 994 acre-feet per year when in-lieu water deliveries are excluded or an increase in storage of about 29 acre-feet per

¹⁰⁶ Las Posas Valley GSP, Appendix E, p. 1133.

¹⁰⁷ Las Posas Valley GSP, Section 2.4, pp. 140-174.

¹⁰⁸ Las Posas Valley GSP, Section 2.4.3, pp. 151-154.

¹⁰⁹ Las Posas Valley GSP, Table 2-7, p. 187.

¹¹⁰ Las Posas Valley GSP, Tables 2-10a and 2-10b, pp. 192-195.

year if in-lieu water deliveries are included.¹¹¹ The Plan estimates that the average change in storage for the ELPMA was an increase in storage of 3,377 acre-feet per year when in-lieu deliveries are excluded or 4,638 acre-feet per year with in-lieu deliveries.¹¹² The estimated average change in storage for Epworth Gravels Management Area was an increase of 184 acre-feet per year.¹¹³

The Agency developed eight model scenarios for the WLPMA and four model scenarios for the ELPMA to calculate the projected water budget and future sustainable yield.¹¹⁴ The scenarios incorporated existing projects, variable amounts of reduced groundwater production, various climate and precipitation projections, and both the 2030 and 2070 DWR climate-change factors. The GSP states that the future sustainable yield of the ELPMA is 20,800 acre-feet per year if projects are implemented or 17,800 acre-feet per year without additional projects.¹¹⁵ The Plan states that the sustainable rate of groundwater pumping for Epworth Gravels aquifer is about 1,320 acre-feet per year.¹¹⁶ Because the WLPMA is hydraulically connected to the adjacent Oxnard Subbasin, the Agency developed model scenarios to evaluate the impact of projects and management actions on mitigating seawater intrusion and achieving the sustainability goal of the adjacent Oxnard Subbasin. None of the modeled scenarios eliminated seawater intrusion in Oxnard Subbasin, a statistical method was used to calculate the future sustainable yield based on the initial results from model scenarios. The future sustainable yield of the WLPMA is estimated to be 12,500 acre-feet per year.¹¹⁷

Department staff recognize that using a statistical method to estimate sustainable yield of the WLPMA was a concern among beneficial users and interested parties. The approach was subject to several comments, which also questioned how the groundwater model outputs were utilized. Department staff reviewed the approach and determined that, even though the approach is novel, it appears to be reasonable. The groundwater model used is well-calibrated and peer-reviewed, and the statistical method utilized is consistent with scientific standards of practice. Department staff believe that the Agency did not err in its approach to estimate sustainable yield, yet acknowledge that other methods could have been utilized.

For the reasons described above, Department staff believe the water budget calculation is sufficiently detailed and substantially complies with the GSP Regulations. The future uncertainties related to the availability of imported and recycled water supply have been considered by the Agency and have adjusted the overdraft estimate, change in storage, and sustainable yield calculations. Additionally, the GSP adequately discusses other

¹¹¹ Las Posas Valley GSP, Section 2.4.3.2, p. 152.

¹¹² Las Posas Valley GSP, Section 2.4.3.2, p. 153.

¹¹³ Las Posas Valley GSP, Section 2.4.3.2, p. 153.

¹¹⁴ Las Posas Valley GSP, Section 2.4.5, pp. 156-175.

¹¹⁵ Las Posas Valley GSP, Section 2.4.5.2.7, p. 174.

¹¹⁶ Las Posas Valley GSP, Section 2.4.5.2.7, p. 175.

¹¹⁷ Las Posas Valley GSP, Section 2.4.5.1.9, p. 169.

uncertainties required by the GSP Regulations such as the impact of population growth and future land use on the projected water budget.

4.3 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.¹¹⁸

4.3.1 Evaluation Summary

Department staff find the description of undesirable results, as defined in the GSP, are reasonable and based on the Agency's understanding of groundwater conditions in the Basin. Sustainable management criteria included in the Plan are developed using credible information and science and substantially comply with the requirements outlined in the GSP Regulations. The minimum thresholds and measurable objectives are established either to improve groundwater conditions in comparison to those present in 2015 or to avoid significant and unreasonable conditions through stabilized groundwater levels. The groundwater elevations that achieve the sustainability goal of maintaining sufficient volume of groundwater in storage and mitigating seawater intrusion in the adjacent Oxnard Subbasin area are used as a proxy for other sustainability indicators. Department staff find it reasonably likely that the approach of either stabilizing or improving groundwater elevation could restrict the migration of water quality contaminants and thus limit degradation of groundwater quality, prevent dewatering and compaction of clay layer which will help to avoid land subsidence that substantially interferes with surface land uses, and not worsen conditions of interconnected surface water, thereby minimizing or preventing the reduction of surface water supplies.

While the rationale used to develop sustainable management criteria and the Agency's approach are reasonable, Department staff believe that additional work will be necessary to clarify the approach and appropriately define the scope of undesirable results associated with chronic decline of groundwater level, reduction of groundwater storage, degraded quality, and land subsidence. Department staff highly encourage the GSAs to address any recommended corrective actions no later than the first five-year update.

4.3.2 Sustainability Goal

The Agency's sustainability goal for the Basin is "to maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net decline in groundwater elevation or storage over wet and dry climatic cycles."¹¹⁹ The Plan further states that the groundwater levels in the WLPMA will be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to mitigate seawater intrusion. The Agency has evaluated three projects and one management action and concluded they could help achieve the Basin's sustainability

¹¹⁸ 23 CCR § 354.22 *et seq.*

¹¹⁹ Las Posas Valley GSP, Section 3.2, p. 316.

goal by maintaining groundwater elevation above the minimum threshold. Department staff find that the Plan's sustainability goals of maintaining sufficient volume of groundwater in storage and keeping groundwater level high enough to mitigate seawater intrusion in the adjacent and hydraulically connected subbasin are reasonable, and the GSP adequately describes that these sustainability goals will be achieved through implementation of the projects and management action within 20 years.

4.3.3 Sustainability Indicators

GSP Regulations specify that an agency define conditions that constitute sustainable groundwater management for a basin, including the characterization of undesirable results and the establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator.¹²⁰

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.¹²¹ Sustainability indicators thus correspond with the six undesirable results – the 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 water¹²² – 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, thereby producing an undesirable result.

The following subsections thus consolidate three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information, as presented in the GSP, pertaining to the processes and criteria relied upon to define undesirable results applicable to the basin, as quantified through the establishment of minimum thresholds, are addressed for each sustainability indicator. However, 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.¹²³

4.3.3.1 Chronic Lowering of Groundwater Levels

The GSP states that the chronic lowering of groundwater levels resulting in a significant and unreasonable depletion of supply is an undesirable result applicable to the Las Posas

¹²⁰ 23 CCR § 354.22 *et seq.*

¹²¹ 23 CCR § 351(ah).

¹²² Water Code § 10721(x).

¹²³ 23 CCR § 354.26(d).

Valley Basin and acknowledges that groundwater production in excess of natural and artificial recharge is the primary cause of the chronic lowering of groundwater levels.¹²⁴ The Plan defines determination of undesirable results for the three management areas in two ways. The first way is that if water levels in a certain number of key wells within the management area are below their minimum threshold during one measurement event, then the management area is experiencing an undesirable result. For the WLPMA, if three of five key wells are below their minimum thresholds, and for the ELPMA, if five of fifteen key wells are below their minimum thresholds, then the management area is experiencing an undesirable result.¹²⁵ The second way a management area may experience undesirable results is if water levels in any one key well are below its minimum threshold either in three consecutive monitoring events or three times in five consecutive monitoring events. This second way of determining undesirable results applies to all three of the management areas.¹²⁶

In the WLPMA, minimum threshold groundwater levels are established based on historical groundwater elevation data, incorporation of potential projects, and future groundwater model simulations that show groundwater elevation recovery during cycles of drought and recovery.¹²⁷ Because the WLPMA is in hydraulic communication with the Oxnard Subbasin,¹²⁸ an analysis of the potential for seawater intrusion in the Oxnard Subbasin was done to establish minimum thresholds in the WLPMA. Except for one key well, the minimum thresholds for the WLPMA are based on the average low historical groundwater elevations in the early 1990s, before surface water deliveries to the WLPMA for in-lieu use began.¹²⁹ For one key well, the minimum threshold is based on the lowest simulated groundwater elevation after 2040 for the model scenario in which the proposed projects are implemented and the 2015-2017 average production rate was continued throughout the 50-year model simulation.¹³⁰ The minimum thresholds of all wells in the WLPMA area are set above the historical low.¹³¹ The GSP states that the WLPMA is not in direct hydraulic communication with the ELPMA or the Epworth Gravels Management Area; therefore, the minimum thresholds for the WLPMA do not impact groundwater elevations in the ELPMA or the Epworth Gravels Management Area.

The minimum threshold groundwater levels in the ELPMA are based on a review of the historical groundwater elevation data, incorporation of potential projects, and an analysis of the projected declines in groundwater elevation and storage under multiple groundwater production scenarios.¹³² In the ELPMA, the minimum thresholds for wells that are adjacent to Arroyo Simi-Las Posas are based on the historical low groundwater

¹²⁴ Las Posas Valley GSP, Section 3.3.1, pp. 318-319.

¹²⁵ Las Posas Valley GSP, Section 3.3.7, pp. 329-330.

¹²⁶ Las Posas Valley GSP, Section 3.3.7, pp. 329-330.

¹²⁷ Las Posas Valley GSP, Sections 3.4.1 and 3.4.1.1, pp. 331-332.

¹²⁸ Las Posas Valley GSP, Executive Summary, p. 20, Section 2.2.2, p. 110.

¹²⁹ Las Posas Valley GSP, Section 3.4.1, p. 332.

¹³⁰ Las Posas Valley GSP, Section 3.4.1, p. 331.

¹³¹ Las Posas Valley GSP, Table 3-1, p. 353.

¹³² Las Posas Valley GSP, Section 3.4.2, p. 334.

elevation, whereas for the remaining wells the minimum thresholds are based on the groundwater level that limits the reduction in storage to less than 20 percent of the estimated groundwater volume stored in 2015.¹³³ In the Epworth Gravels Management Area, the minimum threshold was selected as the groundwater level that limits the reduction in storage to less than 20 percent of the estimated groundwater volume stored in 2015.¹³⁴ Only one representative key well is identified in the Epworth Gravels Management Area, and the established minimum threshold is above the historical low.¹³⁵

The GSP states that the minimum thresholds are anticipated to improve the beneficial uses of the groundwater in the Basin by preventing the chronic lowering of groundwater levels, which will allow long-term use of groundwater supplies without impairing beneficial uses.¹³⁶ FCGMA maintains a database of domestic well owners in the Basin¹³⁷ but the GSP does not clearly discuss how the established minimum thresholds impact the domestic well owners and other beneficial uses and users of groundwater in the Basin. The minimum threshold groundwater levels are lower than 2015 groundwater levels for all wells except for a well located in the WLPMA.¹³⁸ Therefore, Department staff are unclear how the continued decline of groundwater levels will impact the groundwater users in the Basin. Department staff recommend the Agency improve the understanding of the impact(s) of established minimum thresholds on beneficial uses and users in the Basin (see Recommended Corrective Action 2).

The GSP describes multiple criteria for selecting measurable objectives, which vary geographically in the Basin. For the eastern WLPMA, the measurable objective groundwater elevations are based on observed groundwater recovery between 1995 and 2008, resulting from in-lieu deliveries that reduced groundwater production.¹³⁹ The measurable objective groundwater elevation represents half of the total recovery in the historical record.¹⁴⁰ The GSP further clarifies that the measurable objective groundwater elevation is halfway between the historical low and historical high measured since 2000. For the western WLPMA, the measurable objective is the groundwater level to which a key well has recovered historically and allows the Oxnard Subbasin to avoid seawater intrusion.¹⁴¹ The measurable objective groundwater elevations in the WLPMA are at least 20 feet higher than the minimum threshold for groundwater levels.

For the Epworth Gravels Management Area and the ELPMA, the measurable objective groundwater elevations are based on historical groundwater levels and groundwater model simulations that result in stable groundwater elevations after 2040.¹⁴² The

¹³³ Las Posas Valley GSP, Section 3.4.2, p. 335.

¹³⁴ Las Posas Valley GSP, Section 3.3.2, p. 323.

¹³⁵ Las Posas Valley GSP, Table 3-1, p. 353.

¹³⁶ Las Posas Valley GSP, Section 3.4.1.1, p. 332.

¹³⁷ Las Posas Valley GSP, Section 1.8.2, pp. 62-63.

¹³⁸ Las Posas Valley GSP, Tables 3-1 and 3-2, pp. 353-354.

¹³⁹ Las Posas Valley GSP, Section 3.5.1, p. 342.

¹⁴⁰ Las Posas Valley GSP, Section 3.5.1, p. 342.

¹⁴¹ Las Posas Valley GSP, Section 3.5.1, p. 342.

¹⁴² Las Posas Valley GSP, Sections 3.5.2 and 3.5.3, pp. 345 and 348.

measurable objectives in the Epworth Gravels Management Area and the ELPMA are the groundwater levels at which observed declines in groundwater elevation would cease if gradual reductions in groundwater production are implemented between 2020 and 2040.¹⁴³ For the Epworth Gravels Management Area, the established measurable objective is higher than the 2015 groundwater level, but for the ELPMA, the established measurable objectives are lower than the 2015 groundwater level in most of the key wells.¹⁴⁴ Since the long-term change in storage calculations show that the ELPMA is in surplus condition,¹⁴⁵ it appears to Department staff that establishing measurable objectives below the 2015 level will not impact sustainable groundwater management in the ELPMA. Additionally, according to the GSP, the groundwater elevation in the ELPMA is primarily influenced by non-native water and is impacted to a lesser degree by climate conditions,¹⁴⁶ therefore, Department staff believe that maintaining groundwater level above 2015 levels by relying on non-native water might not always be feasible due to the uncertainty of non-native water availability. Furthermore, the GSP states that according to the model simulations, reduced groundwater production did not result in rising water levels throughout the ELPMA.¹⁴⁷ Department staff agree with the conclusion that groundwater demand management alone might not be sufficient for sustainable groundwater management.

There is at least 20 feet of difference between the minimum thresholds and measurable objectives for the WLPMA and the ELPMA, and 30 feet of difference for the Epworth Gravels Management Area, which the Agency considers a margin of safety for operational flexibility.¹⁴⁸

In the ELPMA, the interim milestones have been selected for two out of fifteen wells in which the measurable objectives are set above the 2015 groundwater level.¹⁴⁹ The interim milestones have been selected for three out of five wells in the WLPMA in which the measurable objectives are set above the 2015 groundwater level.¹⁵⁰ The interim milestones have been selected for the single well in the Epworth Gravels Management Area and show continued improvement in groundwater levels until 2040.¹⁵¹

Overall, the Agency plans to stabilize the groundwater levels in the ELPMA and to improve the levels in the WLPMA and the Epworth Gravel Management Area. By 2040, the Agency anticipates groundwater elevations in every representative key well to be above the historical low in the WLPMA and the Epworth Gravel Management area. For the ELPMA, the groundwater levels in most key wells will remain above the historical low;

¹⁴³ Las Posas Valley GSP, Sections 3.5.2.1 and 3.5.3.1, pp. 345 and 348.

¹⁴⁴ Las Posas Valley GSP, Table 3-2, p. 354.

¹⁴⁵ Las Posas Valley GSP, Section 2.3.2.2, p. 129.

¹⁴⁶ Las Posas Valley GSP, Section 2.3.1.2, pp. 125-128, Figures 2-22 to 2-25, pp. 245-251, Section 3.5.2, p. 345.

¹⁴⁷ Las Posas Valley GSP, Section 3.3.4, p. 326.

¹⁴⁸ Las Posas Valley GSP, Section 3.5, pp. 342-348.

¹⁴⁹ Las Posas Valley GSP, Table 3-2, p. 354.

¹⁵⁰ Las Posas Valley GSP, Table 3-2, p. 354.

¹⁵¹ Las Posas Valley GSP, Table 3-2, p. 354.

however, the levels will remain below the historical low in some wells in 2040 but will be stabilized. It appears to Department staff that the Agency's approach, of allowing the groundwater level to further decline in the ELPMA until it stabilizes at or above the groundwater level, which limits the reduction in storage to less than 20 percent relative to the estimated 2015 groundwater storage volume, is based on the water budget findings that the ELPMA is not in overdraft condition, but rather in surplus state. Department staff find the established sustainable management criteria either prevent groundwater conditions from getting worse than historical conditions or avoid significant and unreasonable depletion of groundwater storage in the Basin. Department staff concur with the Agency's basin management approach because of the Basin's substantial reliance on imported and non-native water sources in maintaining groundwater level and storage, considering the Agency cannot guarantee these sources of water will be available in future.

4.3.3.2 Reduction of Groundwater Storage

The GSP states that the significant and unreasonable reduction of groundwater storage is an undesirable result that applies to Las Posas Valley Basin and may occur if the volume of water produced from the Basin exceeds the volume of freshwater recharging the Basin over cycles of drought and recovery.¹⁵²

For the WLPMA, the GSP defines undesirable results for reduction in groundwater storage as groundwater levels that indicate a long-term decline over periods of drought and recovery, and landward migration of the 2015 saline water impact front in the adjacent Oxnard Subbasin after 2040.¹⁵³ The Plan states that the minimum thresholds are selected based on historical groundwater elevations and future groundwater model simulations that show groundwater elevations recovered after multi-year drought cycles. The established minimum thresholds and measurable objectives for the reduction of groundwater storage are the same as the groundwater levels for chronic lowering of groundwater level, which are above historical lows and prevent net landward migration of the 2015 saline water impact front in the Oxnard Subbasin after 2040.¹⁵⁴

For the ELPMA and the Epworth Gravels Management Area, the GSP defines undesirable results for reduction in groundwater storage as groundwater levels that indicate a long-term decline over periods of drought and recovery, and result in greater than 20 percent loss of storage compared to estimates of groundwater stored in 2015.¹⁵⁵ The GSP states that the minimum thresholds are selected based on historical groundwater elevations and future groundwater model simulations to limit the loss of groundwater storage in the ELPMA and Epworth Gravels Management Area to less than 20 percent relative to the estimated groundwater stored in 2015. The established minimum thresholds and measurable objectives for the reduction of groundwater storage

¹⁵² Las Posas Valley GSP, Section 3.3.2, p. 321.

¹⁵³ Las Posas Valley GSP, Section 3.3.2, p. 322.

¹⁵⁴ Las Posas Valley GSP, Section 3.3.2, p. 322.

¹⁵⁵ Las Posas Valley GSP, Section 3.3.2, pp. 322-323.

are the same as the groundwater levels for the chronic lowering of groundwater levels sustainability indicator.

Department staff find the sustainable management criteria defined for reduction of groundwater in storage commensurate with the level of understanding of the Basin setting and that the Agency establishes reasonable criteria to achieve the sustainability goal of the Basin. The GSP also describes how the sustainable management criteria for the reduction of groundwater storage relate to seawater intrusion in the adjacent basin. The Plan states that selected management criteria are anticipated to improve the condition for environmental uses along Arroyo Simi-Las Posas and other beneficial uses of groundwater by allowing for long-term use of groundwater supplies without ongoing loss of storage. However, the GSP does not provide any details on how the beneficial user groups will be impacted when stored groundwater is reduced by 20 percent from that stored in 2015 in the ELPMA and the Epworth Gravels Management Area. Furthermore, a comment letter received by the Department states that the 20 percent reduction in groundwater storage will hinder the ability of a water district to retrieve the groundwater stored under their aquifer storage and recovery project. Department staff recommend the Agency discuss the impacts of the established sustainable management criteria and undesirable results on all beneficial uses and users in the Basin (see Recommended Corrective Action 2).

4.3.3.3 Seawater Intrusion

The GSP states seawater intrusion is an undesirable result that is not applicable to the Basin and also states that direct seawater intrusion has not historically occurred in the Basin. Although there is a possibility that the WLPMA might be impacted by seawater intrusion because of its hydraulic connection with the Oxnard Subbasin, which is currently experiencing seawater intrusion,¹⁵⁶ the GSP discusses the findings from a groundwater model simulation that if the current groundwater production rate were continued over the next 50 years, the seawater intrusion front will remain five miles away from the boundary between the WLPMA and Oxnard Subbasin.¹⁵⁷ Based on this technical analysis, the GSP concludes that seawater intrusion is unlikely to occur; therefore, specific criteria for undesirable results related to seawater intrusion were not established. Department staff agree with the Agency's assessment of seawater intrusion and its approach to not develop sustainable management criteria at this time.

4.3.3.4 Degraded Water Quality

The Agency defines significant and unreasonable degradation of water quality in the WLPMA as the expansion of areas currently impacted by TDS, nitrate, sulfate, and boron concentrations that limit agricultural and potable use.¹⁵⁸ The GSP states that TDS, nitrate, sulfate, and boron exceed the water quality objectives in the WLPMA. The Plan also states that elevated concentrations of TDS and nitrate are likely a legacy of the septic

¹⁵⁶ Las Posas Valley GSP, Section 3.3.3, p. 324.

¹⁵⁷ Las Posas Valley GSP, Section 3.3.3, p. 324.

¹⁵⁸ Las Posas Valley GSP, Section 3.3.4, p. 325.

discharges and fertilizer application practices, with no indication that groundwater production has contributed to an increase in these concentrations while acknowledging that future groundwater production could produce groundwater gradients that migrate water constituents.¹⁵⁹

The Agency's definition of significant and unreasonable degradation of water quality in the ELPMA is if the groundwater gradient causes expansion of the currently impacted areas and limits agricultural and potable use.¹⁶⁰ The GSP states that elevated concentrations of TDS have been observed in the ELPMA along Arroyo Simi-Las Posas, where groundwater is recharged by non-native flow.¹⁶¹ The Plan further states that the groundwater model indicates that groundwater production has little influence on the migration of percolated surface water that recharges the aquifers; instead, the larger influence is the volume of surface water flow in Arroyo Simi-Las Posas.¹⁶²

The GSP states that degraded water quality is an undesirable result that does not apply to the Epworth Gravels Management Area because the available data indicate that the water quality has not exceeded the water quality objectives in the Epworth Gravels Management Area.¹⁶³ The GSP further explains that the source of recharge water is different in the Epworth Gravels Management Area compared to the other two management areas, the primary source of recharge is precipitation infiltration, and the groundwater quality reflects the quality of that recharge source.¹⁶⁴ Department staff note that the Epworth Gravels Management Area does not receive water with elevated concentrations of constituents from the other two management areas because it is hydraulically disconnected from these management areas. For the reasons discussed above, Department staff concur with the Agency's conclusion that currently, degraded water quality is not an issue for the Epworth Gravels Management Area.

Specific minimum thresholds and measurable objectives for water quality were not established because the Agency believes that groundwater quality in the WLPMA and ELPMA is not directly related to groundwater production.¹⁶⁵ Instead, the Agency plans to use groundwater levels as a proxy for groundwater quality degradation. The GSP states that water quality will continue to be monitored over the next five years, and the effectiveness of using groundwater level as a proxy will continue to be assessed.¹⁶⁶ Because the Agency intends to continue monitoring groundwater quality, continue assessing the effectiveness of using groundwater levels as a proxy, and plans to stabilize groundwater level, which will reduce the potential for contaminants to migrate to previously impacted areas, Department staff find the Agency's intent to use groundwater

¹⁵⁹ Las Posas Valley GSP, Section 3.3.4, p. 325

¹⁶⁰ Las Posas Valley GSP, Section 3.3.4, p. 326.

¹⁶¹ Las Posas Valley GSP, Section 3.3.4, p. 326.

¹⁶² Las Posas Valley GSP, Section 3.3.4, p. 326.

¹⁶³ Las Posas Valley GSP, Section 3.3.4, p. 324.

¹⁶⁴ Las Posas Valley GSP, Section 3.3.4, p. 326.

¹⁶⁵ Las Posas Valley GSP, Sections 3.3.1.4 and 3.4.2.4, pp. 333 and 337.

¹⁶⁶ Las Posas Valley GSP, Section 3.3.4, pp. 325-327.

levels as a proxy for groundwater quality is generally reasonable and consistent with the GSP Regulations. While the Department notes the Agency's finding that the water quality in the Basin is not directly related to groundwater production, Department staff recommend the GSAs further investigate to develop a better understanding of how the established groundwater level thresholds correlate with and are protective of groundwater quality (see Recommended Corrective Action 3). Furthermore, Department staff recommend that the GSAs coordinate with the appropriate water quality regulatory agencies to develop a process for determining whether and when groundwater management and groundwater production are adversely impacting groundwater quality (see Recommended Corrective Action 3).

4.3.3.5 Land Subsidence

The GSP defines the undesirable result associated with land subsidence as subsidence that substantially interferes with surface land uses¹⁶⁷ and states that subsidence associated with groundwater production has not caused and is not likely to cause undesirable results.¹⁶⁸ Furthermore, the Plan states the amount of future subsidence in the Basin will depend on whether future water levels decline below historical lows for a sufficient time to cause compaction or remain above these previous low levels.¹⁶⁹

The minimum threshold and measurable objective are not defined for land subsidence. The Agency plans to use the sustainable management criteria established for chronic lowering of groundwater levels as a proxy to monitor undesirable results related to land subsidence. The Agency's plan for the WLPMA and some areas of the ELPMA is to maintain groundwater levels above historical low levels to avoid undesirable results related to land subsidence.¹⁷⁰ Department staff find the use of groundwater levels as a proxy for understanding land subsidence to be a reasonable approach; however, staff believe that the Agency needs to understand whether the proxy can effectively assess the undesirable results related to land subsidence. Therefore, Department staff recommend the Agency incorporate periodic monitoring (e.g., for each five-year update) for land subsidence that can provide the Agency with quantitative data regarding the performance of the proxy (see Recommended Corrective Action 4).

For some areas in the ELPMA, the minimum thresholds for groundwater levels are set beneath historical low groundwater levels.¹⁷¹ The Agency believes that the established minimum thresholds will still limit future subsidence because the Las Posas Valley Basin is designated by the Department as an area with a medium to low potential for future subsidence.¹⁷² The Department publication, which is cited by the GSP to justify the minimum thresholds set lower than historical lows, states that the Department's analysis is intended to identify potential subsidence that may require additional investigation

¹⁶⁷ Las Posas Valley GSP, Section 3.3.4, p. 327.

¹⁶⁸ Las Posas Valley GSP, Section 3.3.4, p. 327.

¹⁶⁹ Las Posas Valley GSP, Section 2.3.5, p. 137.

¹⁷⁰ Las Posas Valley GSP, Table 3-1, p. 353.

¹⁷¹ Las Posas Valley GSP, Table 3-1, p. 353.

¹⁷² Las Posas Valley GSP, Section 3.4.2.5, p. 338.

because the analysis was based on high-level published data and does not incorporate localized data and information.¹⁷³ The Department publication further states that the analysis was completed on a scale which could over or understate the potential for future subsidence on a localized scale. Therefore, Department staff believe that the land subsidence in the Basin should be reevaluated through the analysis of local data and information (see Recommended Corrective Action 4).

Department staff note that while the amount of historical and current subsidence in the Basin is relatively small, and there are no known reports of subsidence-related impacts, the GSP acknowledges that land subsidence related to groundwater production has the potential to impact the beneficial uses and users of groundwater by interfering with surface land uses.¹⁷⁴ The Department received a public comment stating that the GSP does not discuss the potential risk to infrastructure that could be caused by subsidence; this comment is consistent with the Department staff conclude that the GSP does not adequately discuss potential impacts of subsidence on the beneficial uses and users specifically for the area where the Agency is planning to allow continued decline of groundwater levels beneath historical low levels. Therefore, Department staff recommend the Agency clearly identify the areas that are more susceptible to land subsidence, based on how the established minimum threshold groundwater level compares with historical low levels and the presence of infrastructure that are at risk, and describe the potential impacts to beneficial uses and users resulting from land subsidence (see Recommended Corrective Action 4).

4.3.3.6 Depletions of Interconnected Surface Water

The GSP defines the undesirable result associated with depletion of interconnected surface water in the Las Posas Valley Basin as a loss of GDE habitat. The Plan recognizes one potential GDE, Arroyo Simi-Las Posas in the ELPMA, and states that the Agency will try to maintain the groundwater elevation adjacent to the creek to promote the health of the potential GDE.¹⁷⁵ However, the GSP also discusses the possibility of not meeting the objective to maintain the health of the GDE because the flow in Arroyo Simi-Las Posas is largely maintained by discharge from the up-gradient wastewater treatment plants and dewatering wells, which are not managed by the GSAs.¹⁷⁶ Additionally, based on the historical aerial photographs, before the 1970s, the Arroyo Simi-Las Posas was dry and there was no vegetation along the stream.¹⁷⁷ If the discharge from these non-native sources decreases in the future, this may result in the depletion of interconnected surface water and impact the potential GDE.¹⁷⁸ The GSP also states that groundwater production from the Fox Canyon aquifer and underlying aquifers will not impact the flow

¹⁷³ Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California, DWR, 2014. [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater Management/Bulletin-118/Files/Statewide-Reports/GWU2013_Apdx_F_Final.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater%20Management/Bulletin-118/Files/Statewide-Reports/GWU2013_Apdx_F_Final.pdf)

¹⁷⁴ Las Posas Valley GSP, Section 3.3.5, p. 328.

¹⁷⁵ Las Posas Valley GSP, Section 3.3.6, p. 328.

¹⁷⁶ Las Posas Valley GSP, Sections 2.3.7 and 3.3.6, pp. 138-139 and 328.

¹⁷⁷ Las Posas Valley GSP, Section 2.3.7, p. 138.

¹⁷⁸ Las Posas Valley GSP, Section 3.3.6, p. 328.

in Arroyo Simi-Las Posas because Arroyo Simi-Las Posas is a losing stream in the ELPMA, and groundwater elevations are below the bottom of the creek.¹⁷⁹

The minimum threshold and measurable objective for the depletion of interconnected surface water in the ELPMA is the same as the minimum threshold and measurable objective established for chronic lowering of groundwater levels.¹⁸⁰ In addition to wells screened in Fox Canyon and Grimes Canyon aquifers, the sustainable management criteria are also established for two wells screened in the shallow alluvial aquifer because the shallow alluvial aquifer is recharged by and may be hydraulically connected to the Arroyo Simi-Las Posas. The minimum threshold and measurable objectives for both wells are set at groundwater levels that are lower than the historical low.¹⁸¹ Department staff find the approach to manage the depletion of interconnected surface water through stabilizing groundwater levels in the shallow alluvial aquifer to be reasonable because the Agency does not have control over the non-native discharge which recharges shallow groundwater, and there are future uncertainties related to the availability of such discharges.

Minimum thresholds and measurable objectives are not defined for the WLPMA and the Epworth Gravels Management Area because there are no interconnected surface waters or potential GDEs identified.¹⁸²

4.4 MONITORING NETWORKS

GSP Regulations require that a monitoring network be developed for each basin including monitoring objectives, monitoring protocols, and data reporting requirements. The network shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions.¹⁸³

4.4.1 Evaluation Summary

The Agency utilized the data from existing monitoring programs to assess groundwater conditions in the Basin, plans to continue monitoring groundwater level and quality, and believes that the existing monitoring network is sufficient to provide an understanding of representative groundwater conditions. The Agency plans to document changes in groundwater conditions related to six sustainability indicators using representative wells, which are a subset of the existing network of groundwater wells. The Agency plans to use groundwater level data as a proxy to assess groundwater conditions related to other sustainability indicators. The conditions observed at the representative key wells will be used to document progress toward sustainability goals.

¹⁷⁹ Las Posas Valley GSP, Section 3.4.2.6, pp. 338-339.

¹⁸⁰ Las Posas Valley GSP, Sections 3.4.2.6 and 3.5.2.6, pp. 338-339 and 347-348.

¹⁸¹ Las Posas Valley GSP, Tables 3-1 and 3-2, pp. 353-354.

¹⁸² Las Posas Valley GSP, Sections 3.4.1.6, 3.4.3.6, 3.5.1.6 and 3.5.3.6, pp. 334, 342, 345 and 350.

¹⁸³ 23 CCR § 354.32 *et seq.*

Although the Agency believes that the existing monitoring network is sufficient to document progress toward sustainability goal, the GSP identifies data gaps and discusses the techniques to improve monitoring networks for each sustainability indicator. Department staff agree that improving the monitoring network will help GSAs gain a better understanding of local conditions and to demonstrate that implementation of the GSP is achieving the sustainability goal.

4.4.2 Monitoring Networks

The existing monitoring networks include groundwater wells, stream gauges, and weather stations. These networks have been used in the past to understand groundwater and related surface conditions. The current monitoring network includes both monitoring wells and production wells, and the Agency plans to incorporate additional dedicated monitoring wells to the extent possible.¹⁸⁴ Groundwater level monitoring started in the 1940s in the WLPMA and the 1920s in the ELPMA.¹⁸⁵ Groundwater extraction data have been collected by the Agency since 1983. Surface flow data have been recorded since the 1930s, and precipitation data have been recorded for more than a century.¹⁸⁶

The current groundwater level monitoring network consists of 40 wells in the WLPMA and 90 wells in the ELPMA that are measured monthly to quarterly, and of which, 21 wells are selected for representative monitoring.¹⁸⁷ The groundwater level data are being collected by the Ventura County Watershed Protection District, Calleguas Municipal Water District, and UWCD, which are partner agencies. Because these agencies follow different data collection protocols, FCGMA plans to work with these agencies to ensure that future data collection is conducted according to the protocol that is consistent with best management practices.¹⁸⁸ The Agency plans to collect groundwater elevation data from the 21 representative key wells within a 2-week window in the spring and fall of each year. In addition to manual measurements, the Agency plans to monitor short-term and long-term trends in groundwater elevation using down-hole transducers. The GSP states that the spatial and temporal coverage of the existing monitoring network is sufficient to provide an understanding of representative conditions of the principal aquifer, and the aquifer identified as an important source of water.¹⁸⁹

The GSP explains that because the groundwater level and groundwater storage sustainability indicators are interrelated and the current groundwater level network is structured to provide data from which hydraulic gradients can be calculated, the groundwater monitoring network is sufficient to document changes in groundwater storage.¹⁹⁰ The numerical models will be used to calculate the annual change in storage using the collected groundwater level data and will be reported for each aquifer in annual

¹⁸⁴ Las Posas Valley GSP, Sections 4.1 and 4.2, p. 387.

¹⁸⁵ Las Posas Valley GSP, Section 4.2.1, pp. 387-388.

¹⁸⁶ Las Posas Valley GSP, Sections 4.2.2 and 4.2.3, pp. 390-391.

¹⁸⁷ Las Posas Valley GSP, Sections 4.2.1 and 4.4.1, pp. 387-388 and 397, Table 3-2, p. 354.

¹⁸⁸ Las Posas Valley GSP, Section 4.5, pp. 397-398.

¹⁸⁹ Las Posas Valley GSP, Section 4.2.1, pp. 388-389.

¹⁹⁰ Las Posas Valley GSP, Section 4.3.2, pp. 393-394.

reports. The Agency believes that the monitoring network is capable of documenting changes to both the groundwater level and groundwater storage.¹⁹¹

The current groundwater quality monitoring network in the Basin monitors five constituents: TDS, chloride, nitrate, sulfate, and boron. The GSP includes a discussion of 2011 to 2015 water quality conditions related to the five constituents of concern and over 200 water quality hydrographs that show current and historical water quality trends, with some hydrograph data going back to the 1920s and the 1930s.¹⁹² The hydrographs compare the five water quality constituents with Basin Plan Water Quality Objectives or Maximum Contaminant Levels (MCL) because water quality constituents are associated with the water quality thresholds either adopted by the Agency or mandated by the LARWQCB. The Plan states that the groundwater monitoring frequency is adequate to document trends in groundwater quality concentrations because changes in groundwater quality occur on a longer timescale than changes in groundwater elevation.¹⁹³ Although the Agency plans to use groundwater level data as a proxy for the degraded water quality sustainability indicator, the annual groundwater quality monitoring in the Basin will continue, and the groundwater quality trends will be used to assess whether monitoring frequency needs to be adjusted.¹⁹⁴

There is no monitoring program to directly monitor land subsidence in the Basin. The Agency plans to use groundwater elevation data to monitor conditions related to land subsidence. The GSP states that direct subsidence monitoring is not required for the area of the Basin where minimum thresholds for chronic lowering of groundwater levels are above the historical low. The Plan acknowledges that the subsidence monitoring program will be necessary for the northern part of the ELPMA where minimum thresholds for chronic lowering of groundwater levels are beneath the historical low groundwater elevations.¹⁹⁵ Department staff believe that a subsidence monitoring program will help the Agency to evaluate if the proxy monitoring is adequate to avoid undesirable results related to land subsidence. Therefore, Department staff recommend the GSP be updated to incorporate a monitoring plan to monitor land subsidence on a periodic basis (see Recommended Corrective Action 4).

The GSP states that shallow groundwater will be monitored to understand the conditions related to the depletion of interconnected surface water.¹⁹⁶ The Agency's monitoring network includes two representative key wells screened in the shallow alluvial aquifer that have established sustainable management criteria.¹⁹⁷ Even though the minimum threshold water levels for these wells are set below historical low groundwater levels,¹⁹⁸

¹⁹¹ Las Posas Valley GSP, Section 4.3.2, p. 394.

¹⁹² Las Posas Valley GSP, Appendix F, pp. 1479-1681.

¹⁹³ Las Posas Valley GSP, Section 4.3.4, p. 395.

¹⁹⁴ Las Posas Valley GSP, Section 4.4.4, p. 397.

¹⁹⁵ Las Posas Valley GSP, Section 4.3.5, p. 396.

¹⁹⁶ Las Posas Valley GSP, Section 4.3.5, p. 396.

¹⁹⁷ Las Posas Valley GSP, Tables 3-1 and 3-2, pp. 353-354.

¹⁹⁸ Las Posas Valley GSP, Table 3-1, p. 353.

the GSP acknowledges that the Agency established an aspirational sustainability goal of maintaining groundwater levels in the shallow alluvial aquifer at or near 2015 conditions.¹⁹⁹ This sustainability goal is intended to mitigate undesirable results related to surface water connectivity and to promote the environmental beneficial use of water along Arroyo Simi-Las Posas.²⁰⁰ The GSP acknowledges that no monitoring wells exist within the boundaries of the potential GDE and that shallow monitoring wells can be added²⁰¹ to improve the understanding of potential connectivity between the shallow alluvial aquifer and the riparian vegetation.

Although the Agency plans to monitor groundwater levels with an intent to either improve or maintain the condition for potential GDEs, Department staff are unclear if the shallow groundwater monitoring network is capable of collecting data related to the depletion of interconnected surface water. Department staff recommend the GSA provide either additional information to demonstrate that the monitoring network can effectively characterize whether undesirable results related to depletions of interconnected surface water are occurring in the Basin or a plan to fill the data gap related to depletion of interconnected surface water (see Recommended Corrective Action 1).

4.5 PROJECTS AND MANAGEMENT ACTIONS

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.²⁰²

4.5.1 Evaluation Summary

The GSP includes projects and one management action that appear to be reasonable and feasible and, if implemented, appear likely to help the Basin be operated within its sustainable yield.²⁰³ The projects included in the Plan are designed for specific management areas, whereas the management action is for the entire Basin. Department staff find that the projects and the management action are directly related to the sustainable management criteria and present a reasonable approach to achieving the sustainability goal of the Basin through augmenting Basin recharge and reducing the consumption of groundwater. Therefore, Department staff regard the projects and management action as generally consistent with the requirements of the GSP Regulations.

The GSP provides general timelines for implementation of the projects and management action, but lacks specific details regarding expected start date, the pumping reduction plan, and when the expected benefits from the projects and management action can be

¹⁹⁹ Las Posas Valley GSP, Section 3.5.2.6, pp. 347-348.

²⁰⁰ Las Posas Valley GSP, Section 3.5.2.6, pp. 347-348.

²⁰¹ Las Posas Valley GSP, Section 4.6.5, p. 401.

²⁰² 23 CCR § 354.44 *et seq.*

²⁰³ Las Posas Valley GSP, Sections 3.2 and 5.1, pp. 316 and 427.

observed. Department staff acknowledge that the Agency is planning to develop these details in coming years but recognize that Basin sustainability is mostly dependent on the implementation of the projects and management action, so material modification or lack of implementation may affect the Department's conclusions regarding the adequacy of the GSP or its implementation in future evaluations. Department staff has been monitoring progress made towards the implementation of the projects and the management action and note that the details of implementation schedule and new projects were discussed in the Agency's board meetings conducted in 2021.

4.5.2 Projects

Three projects are included in the GSP with an intent to help the Basin achieve its sustainability goal:

- Project 1. Purchase of imported water from CMWD for Basin replenishment
- Project 2. Removal of invasive plant species along the Arroyo Simi-Las Posas Corridor
- Project 3. Purchase of recycled water for discharge to Arroyo Simi-Las Posas to provide additional water for groundwater recharge.

The GSAs developed Project 1 to improve the groundwater condition in the WLPMA, whereas Projects 2 and 3 are aimed to improve groundwater recharge in the ELPMA.

The GSP describes that Project 1, the purchase of imported water from CMWD for Basin replenishment, would supply imported water to the eastern part of the WLPMA in lieu of groundwater production and is limited to water purveyors with the ability to receive water from CMWD.²⁰⁴ Based on the numerical model, this project is expected to reduce production in the WLPMA by 1,762 acre-feet per year.²⁰⁵ The GSP states that this project would directly result in decreased groundwater production from discrete wells in the WLPMA and is anticipated to help maintain groundwater elevations above the minimum thresholds and to help the WLPMA meet the measurable objective water levels.²⁰⁶ According to the information provided in the GSP, Project 1 appears feasible to Staff since it does not require the construction of new facilities or additional California Environmental Quality Act (CEQA) review. However, it could take some time for the Project to be implemented because it could be implemented only after agreements have been completed for the purchase and delivery of water from CMWD and after the funding source has been identified.²⁰⁷ Additionally, given that the demand for imported water is likely to increase in the future as many of the groundwater management agencies are planning to import water, there is a possibility that the GSAs may face difficulties acquiring imported water. Department staff believe that the GSAs should have a contingency plan

²⁰⁴ Las Posas Valley GSP, Section 5.2.1, p. 428.

²⁰⁵ Las Posas Valley GSP, Section 5.2.2, p. 429.

²⁰⁶ Las Posas Valley GSP, Sections 5.2.1 and 5.2.2, pp. 428-429.

²⁰⁷ Las Posas Valley GSP, Sections 5.2.4 and 5.2.6, p. 430.

in the event that imported water is not available to meet the basin sustainability (see Recommended Corrective Action 5).

The GSP describes that Project 2, the Arroyo Simi-Las Posas Arundo removal project, involves removing the invasive plant species, Arundo, from approximately 324 acres of land along the Arroyo Simi-Las Posas corridor and replacing with native riparian plant species, which are expected to consume less water than Arundo.²⁰⁸ The Plan estimates that this project could result in up to an additional 2,680 acre-feet per year of recharge to the ELPMA if all of the Arundo within the 324-acre area are removed.²⁰⁹ The GSP states that, due to the additional recharge, this project is anticipated to help maintain groundwater elevations above the minimum thresholds in the southern part of the ELPMA and will lessen groundwater pumping reductions necessary to maintain groundwater elevations close to the measurable objectives.²¹⁰ The Plan describes that CEQA review has already been completed for this project, but permits are likely to be required from the various agencies, and the project is anticipated to take approximately one to two years to complete. The GSP identifies grant funds from outside agencies that support the restoration of native plant habitat and flood control benefits, replenishment fees collected by FCGMA, or a combination of grant funding and replenishment fees as the funding source for this project.²¹¹

The GSP describes that Project 3, the Arroyo Simi-Las Posas Water acquisition project, involves the purchase of recycled water from the City of Simi Valley and committing the City to continue discharging the water to Arroyo Simi-Las Posas for groundwater recharge in the ELPMA.²¹² The Agency anticipates the availability of 3,000 acre-feet per year of recycled water from the Simi Valley Water Quality Control Plant and 1,700 acre-feet per year of water from the dewatering wells.²¹³ The GSP states that this project will assist with maintaining groundwater storage, as well as maintaining a sustainable yield that is closer to the recent groundwater production rate. The Plan clarifies that the benefits of this project will be limited to the southern part of the ELPMA, where the project will help to maintain groundwater elevations above the minimum thresholds and close to the measurable objectives.²¹⁴ The GSP describes that the project does not require the construction of new facilities and could be completed within one to two years. Based on these factors which appear to indicate that the GSA has already committed to implementing Project, it appears to Department staff that Project 3 is feasible. The funding source for this project has been identified as replenishment fees collected by FCGMA and grant funding.²¹⁵ The Plan describes that the primary uncertainty associated with the Arroyo Simi-Las Posas Water Acquisition Project is the quality of the water that will be

²⁰⁸ Las Posas Valley GSP, Sections 5.2.4 and 5.3.1, pp. 430-431.

²⁰⁹ Las Posas Valley GSP, Sections 5.2.4 and 5.3.1, pp. 430-431.

²¹⁰ Las Posas Valley GSP, Sections 5.2.4 and 5.3.2, pp. 430-432.

²¹¹ Las Posas Valley GSP, Sections 5.2.4 and 5.3.2, pp. 430 and 433.

²¹² Las Posas Valley GSP, Section 5.4.1, p. 433.

²¹³ Las Posas Valley GSP, Section 5.4.1, p. 433.

²¹⁴ Las Posas Valley GSP, Section 5.4.2, pp. 434-435.

²¹⁵ Las Posas Valley GSP, Section 5.4.6, p. 436.

purchased because the concentration of TDS and other constituents in the discharge water may be a hindrance to project permitting.²¹⁶

The GSP provides general timelines for project implementation but explicitly states that inclusion of these projects in the GSP does not mean the Agency is making a commitment to fund or construct these projects; rather, these projects met various feasibility criteria and were analyzed to understand their impacts on groundwater elevation and the sustainable yield of the Basin.²¹⁷ The GSP further states that these projects are included in the GSP because these projects have quantifiable information for evaluation and modeling and meet other GSP Regulations criteria rather than because of the project feasibility.²¹⁸

Despite the uncertainties discussed above regarding the basin-wide sustainability, Department staff find that, at this time, the GSP reasonably describes how the projects will improve the groundwater condition in the Basin and provides a general timeline for implementation. The projects are developed by the GSAs to help ensure that the Basin will be operated within its sustainable yield and are expected to mitigate the adverse condition because of the Agency's plan to augment water supply and reduce groundwater consumption. Therefore, Department staff believe that the projects included in the GSP appear to improve groundwater conditions in the Basin and demonstrate a feasible approach to meet the Basin's sustainability goals.

4.5.3 Management Actions

The GSP includes one management action, which is implementing a reduction in groundwater production. By reducing groundwater production, the GSP intends to prevent chronic declines in groundwater levels, loss of storage, subsidence due to groundwater withdrawal, and seawater intrusion in the adjacent Oxnard Subbasin.²¹⁹ The Plan describes that the reductions in groundwater production were modeled as a linear decrease from the 2015-2017 production rates in both the ELPMA and the WLPMA and states that the exact reductions that will be implemented will be determined by the FCGMA Board based on data collected and analyzed for this GSP.²²⁰

The GSP discusses the relationship of the management action with sustainability criteria, expected benefits, metrics for evaluation, and funding sources. The Agency intends to implement the management action within months after the proposed reductions are approved by the FCGMA board.²²¹

The GSP provides an overview of how and when the management action will be implemented, but also states that allocations still need to be determined and approved by the GSAs. Department staff believe that the management action included in the GSP is

²¹⁶ Las Posas Valley GSP, Section 5.4.7, p. 436.

²¹⁷ Las Posas Valley GSP, Section 5.1, p. 428.

²¹⁸ Las Posas Valley GSP, Section 5.1, p. 427.

²¹⁹ Las Posas Valley GSP, Section 5.5.1, p. 436.

²²⁰ Las Posas Valley GSP, Section 5.5.1, p. 437.

²²¹ Las Posas Valley GSP, Section 5.5.4, p. 439.

reasonable and, if implemented, appears likely to help the GSAs achieve sustainability in the Basin because the management action aims to reduce pumping which will, in turn, help to improve groundwater conditions in the Basin. Department staff understand that the Basin sustainability depends on the successful and timely implementation of the management action to reduce groundwater pumping. Therefore, Department staff will monitor progress made towards the implementation of the management action.

4.6 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 basin."²²² 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.²²³ The Las Posas Basin has four adjacent basins/subbasins: Oxnard, Pleasant Valley, Arroyo Santa Rosa, and Tierra Rejada.

The Las Posas Basin is in hydraulic communication with the Oxnard Subbasin and Pleasant Valley Basin. FCGMA is the exclusive GSA for developing and implementing the respective groundwater sustainability plans in the Oxnard Subbasin, Pleasant Valley Basin, and Las Posas Basin. FCGMA took a regional approach to determine the combined sustainable yield of all three basins and then determined the sustainable yield for each groundwater basin. The sustainable management criteria for each respective groundwater sustainability plan were established with consideration for the sustainability goals of the adjacent basins and to operate each groundwater basin within their sustainable yield.

Department staff understand that the established sustainability management criteria and strategy to reach sustainability in the Las Posas Basin is primarily related to improving groundwater levels in the principal aquifer and avoiding seawater intrusion in the adjacent Oxnard Subbasin. Based on this strategy, the Agency's history of actively collaborating with local agencies, other information provided in the GSP such as consideration of adjacent basin sustainability while establishing sustainable management criteria, and the Agency's regional approach in developing the respective groundwater sustainability plans which demonstrates reasonable consideration to adjacent basins and their sustainability goals and metrics, Department staff determine that the Las Posas GSP will not adversely impact the ability of the adjacent basins to be operated sustainably and will not impede the adjacent basins' ability to achieve their respective sustainability goals.

²²² Water Code § 10733(c).

²²³ 23 CCR § 354.28(b)(3).

5 STAFF RECOMMENDATION

Department staff recommend approval of the GSP with the recommended corrective actions listed below. The Las Posas Valley GSP conforms with Water Code Sections 10727.2 and 10727.4 of SGMA and substantially complies with the GSP Regulations. Implementation of the GSP will likely achieve the sustainability goal for the Las Posas Valley Basin. The GSAs have 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 GSAs for the first five-year assessment 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

Investigate the hydraulic connectivity of the Arroyo Simi-Las Posas, shallow aquifers, and principal aquifer to understand the reliance of the potential GDEs on the native flow and the depletion of interconnected surface water bodies. Also, identify specific locations where Arroyo Simi-Las Posas is connected to the underlying aquifer and conduct necessary investigation to quantify the depletion of interconnected surface water along with the timing of depletions.

Provide a schedule detailing when and how the data gaps identified in the GSP related to shallow groundwater monitoring near surface water bodies will be fulfilled and confirm the identification of potential GDEs.

RECOMMENDED CORRECTIVE ACTION 2

Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20 percent compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users.

RECOMMENDED CORRECTIVE ACTION 3

By the first periodic evaluation of the GSP, the Agency should further describe efforts to evaluate the connection between groundwater production and groundwater quality, including the monitoring the Agency is conducting and any progress made toward evaluation of the causal relationship referenced in the GSP. The Agency should document specific details of the processes they will use to determine if groundwater

management and extraction are causing adverse impacts to groundwater quality. This should include coordination with all interested parties, beneficial users of groundwater, water quality regulatory agencies, and water quality program administrators within the Basin.

RECOMMENDED CORRECTIVE ACTION 4

Include periodic subsidence monitoring into the GSP to demonstrate that groundwater levels are appropriate to use as a proxy. Provide a technical basis that supports the Agency's decision of setting the minimum threshold for groundwater level below the historical low in some areas of the Basin and how that minimum threshold will avoid undesirable results related to land subsidence. Additionally, describe the potential impacts of land subsidence on beneficial uses and users of groundwater and the potential for land subsidence to impact critical infrastructure, especially for the area where the minimum threshold groundwater levels are lower than the historical low.

RECOMMENDED CORRECTIVE ACTION 5

Develop and provide a new project or a management action as a contingency plan to include in the GSP. This alternate project or management action should address how the Basin intends to achieve its sustainability goal in the event that imported water is unavailable to use in lieu of groundwater production in the WLPMA, or if any of the project or management action included in the GSP is unable to produce expected benefit. Additionally, the project or management action provided should be developed so that it is ready to be implemented with the 20-year SGMA timeline.