CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE
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October 26, 2023

Parag Kalaria
Elsinore Valley Municipal Water District
31315 Chaney Street
Lake Elsinore, CA 92530
wresources@evmwd.net

RE: Elsinore – Elsinore Valley Subbasin - 2022 Groundwater Sustainability Plan

Dear Parag Kalaria,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the Elsinore – Elsinore Valley Subbasin 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 Elsinore Valley Subbasin 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 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 periodic review of the Elsinore Valley Subbasin GSP no later than January 26, 2027.

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

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director
Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Approval of the Elsinore – Elsinore Valley Subbasin Groundwater Sustainability Plan

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF FINDINGS REGARDING THE APPROVAL OF THE ELSINORE – ELSINORE VALLEY SUBBASIN 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 its 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 by the Elsinore Valley Groundwater Sustainability Agency (GSA or Agency) for the Elsinore – Elsinore Valley Subbasin (Basin No. 8-004.01).

Department management has discussed the Plan with staff and has reviewed the Department Staff Report, entitled Sustainable Groundwater Management Program Groundwater Sustainability Plan Assessment Staff Report, attached as Exhibit A, recommending approval of the GSP. 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 therefore **APPROVES** the Plan and makes the following findings:

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 within the statutory deadline of January 31, 2022. (Water Code § 10720.7(a); 23 CCR § 355.4(a)(1).)

    2. The Plan was complete, meaning it generally appeared to include the information required by the Act and the GSP Regulations sufficient to warrant a thorough evaluation and issuance of an assessment by the Department. (23 CCR § 355.4(a)(2).)

    3. The Plan, either on its own or in coordination with other Plans, covers the entire Elsinore Valley Subbasin. (23 CCR § 355.4(a)(3).)

B. The general standards the Department applied in its evaluation and assessment of the Plan are: (1) "conformance" with the specified statutory requirements, (2) "substantial compliance" with the GSP Regulations, (3) whether the Plan is likely

to achieve the sustainability goal for the Elsinore Valley Subbasin (Subbasin) within 20 years of the implementation of the Plan, and (4) whether the Plan adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin. (Water Code § 10733.) Application of these standards requires exercise of the Department's expertise, judgment, and discretion when making its determination of whether a Plan should be deemed "approved," "incomplete," or "inadequate."

The statutes and GSP Regulations require Plans to include and address a multitude and wide range of informational and technical components. The Department has observed a diverse array of approaches to addressing these technical and informational components being used by GSAs in different basins throughout the state. The Department does not apply a set formula or criterion that would require a particular outcome based on how a Plan addresses any one of SGMA's numerous informational and technical components. The Department finds that affording flexibility and discretion to local GSAs is consistent with the standards identified above; the state policy that sustainable groundwater management is best achieved locally through the development, implementation, and updating of local plans and programs (Water Code § 113); and the Legislature's express intent under SGMA that groundwater basins be managed through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner. (Water Code § 10720.1(h)) The Department's final determination of a Plan's status is made based on the entirety of the Plan's contents on a case-by-case basis, considering and weighing factors relevant to the particular Plan and Subbasin under review.

C. In making these findings and Plan determination, the Department also recognized that: (1) it maintains continuing oversight and jurisdiction to ensure the Plan is adequately implemented; (2) the Legislature intended SGMA to be implemented over many years; (3) SGMA provides Plans 20 years of implementation to achieve the sustainability goal in a Subbasin (with the possibility that the Department may grant GSAs an additional five years upon request if the GSA has made satisfactory progress toward sustainability); and, (4) local agencies acting as GSAs are authorized, but not required, to address undesirable results that occurred prior to enactment of SGMA. (Water Code §§ 10721(r); 10727.2(b); 10733(a); 10733.8.)

D. The Plan conforms with Water Code §§ 10727.2 and 10727.4, substantially complies with 23 CCR § 355.4, and appears likely to achieve the sustainability goal for the Subbasin. It does not appear at this time that the Plan will adversely affect the ability of adjacent basins to implement their GSPs or impede achievement of sustainability goals.

1. The sustainable management criteria and long-term goal to maintain groundwater levels within historical conditions and above pump intakes, and operate Subbasin within its sustainable yield, are sufficiently justified and explained. The Plan relies on credible information and science to quantify the groundwater conditions that the Plan seeks to avoid and provides an objective way to determine whether the Subbasin is being managed sustainably in accordance with SGMA. (23 CCR § 355.4(b)(1).)

2. The Plan demonstrates a reasonable understanding of where data gaps exist and demonstrates a commitment to eliminate those data gaps. For example, the GSA plans to collect additional data to conduct an inventory of wells in the Subbasin and improve understanding of well construction details, including well location and well type information, expand monitoring networks to improve characterization of interconnected surface water and understanding of the relationship between groundwater pumping, groundwater levels, and the presence/condition of groundwater dependent ecosystems. Filling these known data gaps, and others described in the Plan, should lead to refinement of the GSA's monitoring networks and sustainable management criteria and help inform and guide future adaptive management strategies and projects and management actions. (23 CCR § 355.4(b)(2).)

3. The projects and management actions proposed are designed to respond to changing conditions in the Subbasin and maintain sufficient groundwater supply and quality to achieve the Subbasin's sustainability goal. The GSA plans to achieve and maintain sustainability for the Subbasin by expanding the existing conjunctive water management program, increasing volume of groundwater in storage through managed aquifer recharge, stabilizing groundwater levels by adding operational flexibility through rotating pumping locations, and improving groundwater quality by phasing out septic tanks in the Subbasin. The projects and management actions are reasonable and commensurate with the level of understanding of the Subbasin setting. The projects and management actions described in the Plan provide a feasible approach to achieving the Subbasin's sustainability goal and should provide the GSA with greater versatility to adapt and respond to changing conditions and future challenges during GSP implementation. (23 CCR § 355.4(b)(3).)

4. The Plan provides a detailed explanation of how the varied interests of groundwater uses and users in the Subbasin were considered in developing the sustainable management criteria by setting sustainable management criteria that is not expected to cause negative impacts on groundwater uses and users. (23 CCR § 355.4(b)(4).)

5. The Plan's projects and management actions appear feasible at this time and appear likely to prevent undesirable results and ensure that the Subbasin is operated within its sustainable yield within 20 years. The Department will continue to monitor Plan implementation and reserves the right to change its determination if projects and management actions are not implemented or appear unlikely to prevent undesirable results or achieve sustainability within SGMA timeframes. (23 CCR § 355.4(b)(5).)

6. The Plan includes a reasonable assessment of overdraft conditions and includes reasonable means to mitigate overdraft, if present. (23 CCR § 355.4(b)(6).)

7. At this time, it does not appear that the Plan will adversely affect the ability of an adjacent basin/subbasin to implement its GSP or impede achievement of sustainability goals in an adjacent basin/subbasin. The Subbasin adjoins the Temecula Valley Basin to the southeast and the Bedford-Coldwater Subbasin to the northwest (both of which are designated as very low priority). The Plan includes an analysis of potential impacts to the adjacent basin and subbasin related to the established minimum thresholds for each sustainability indicator. The Plan does not anticipate any impacts to the adjacent basin and subbasin resulting from the minimum thresholds defined in the Plan. (23 CCR § 355.4(b)(7).)

8. Because a single plan was submitted for the Subbasin, a coordination agreement was not required. (23 CCR § 355.4(b)(8).)

9. The GSA's single member, Elsinore Valley Municipal Water District, has historically conducted monitoring of groundwater conditions in the Subbasin and implemented projects and management actions to address problematic groundwater conditions (e.g., implementation of a conjunctive use project and a water conservation program to reduce potable water demands, developing recycled water sources to offset potable water demands, and participation in regional efforts to develop mitigation strategies for improving water quality). The GSA's history of groundwater management provide a reasonable level of confidence that the GSA has the legal authority and financial resources necessary to implement the Plan. (23 CCR § 355.4(b)(9).)

10. Through review of the Plan and consideration of public comments, the Department determines that the GSA adequately responded to comments that raised credible technical or policy issues with the Plan, sufficient to warrant approval of the Plan at this time. The Department also notes that 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. (23 CCR § 355.4(b)(10).)

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

1. The Plan sets forth minimum thresholds for chronic lowering of groundwater levels that are defined based on operational considerations to maintain groundwater levels above pump intakes in municipal supply wells. Minimum thresholds are defined based on historical groundwater levels for all other wells (private and domestic wells), which the GSA does not anticipate will result in undesirable results, based on previous observations; the GSA intends to better assess potential impacts on private and domestic wells when data gaps related to well information are addressed during Plan implementation (Elsinore Valley GSP, pp. 243-251). The Plan's compliance with the requirements of SGMA and substantial compliance with the GSP Regulations supports 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 in its evaluation of the Plan. (23 CCR § 350.4(g).

2. The Plan acknowledges and identifies interconnected surface waters within the Subbasin. The GSA proposes initial sustainable management criteria to manage this sustainability indicator and measures to improve understanding and management of interconnected surface water. The GSA acknowledges, and the Department agrees, many data gaps related to interconnected surface water exist. The GSA should continue filling data gaps, collecting additional monitoring data, and coordinating with resources agencies and interested parties to understand beneficial uses and users that may be impacted by depletions of interconnected surface water caused by groundwater pumping. Future periodic evaluations of the Plan and amendments to the Plan should aim to improve the initial sustainable management criteria as more information and improved methodology becomes available.

3. The Subbasin is not currently in a state of long-term overdraft and projections of future basin extractions are likely to stay within current and historic ranges, at least until the next periodic evaluation by the GSAs and the Department. Projections of future basin extractions appear likely to stay within current and historic ranges, at least until the next periodic evaluation by the GSA and the Department. Basin groundwater levels and

other SGMA sustainability indicators appear unlikely to substantially deteriorate while the GSA implements the Department's recommended corrective actions.

4. The California Environmental Quality Act (Public Resources Code § 21000 *et seq*.) does not apply to the Department's evaluation and assessment of the Plan.

Accordingly, the GSP submitted by the Agency for the Elsinore Valley Subbasin is hereby **APPROVED.** The recommended corrective actions identified in the Staff Report will assist the Department's future review of the Plan's implementation for consistency with SGMA and the Department therefore recommends the Agency address them by the time of the Department's periodic review, which is set to begin on January 26, 2027, as required by Water Code § 10733.8.

Signed:

Karla Nemeth

Karla Nemeth, Director
Date: October 26, 2023

Exhibit A: Groundwater Sustainability Plan Assessment Staff Report – Elsinore – Elsinore Valley Subbasin

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

Groundwater Basin Name:	Elsinore – Elsinore Valley Subbasin (No. 8-004.01)
Submitting Agency:	Elsinore Valley Groundwater Sustainability Agency
Submittal Type:	Initial GSP Submission
Submittal Date:	January 26, 2022
Recommendation:	Approved
Date:	October 26, 2023

The Elsinore Valley Groundwater Sustainability Agency (GSA or Agency) submitted the Elsinore Valley Subbasin Groundwater Sustainability Plan (GSP or Plan) for the Elsinore - Elsinore Valley Subbasin (Subbasin) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA)[1] and GSP Regulations.[2] The GSP covers the entire Subbasin for the implementation of SGMA.

After evaluation and assessment, Department staff conclude that the Plan includes the required components of a GSP, demonstrates a thorough understanding of the Subbasin based on what appears to be the best available science and information, sets well explained, supported, and reasonable sustainable management criteria to prevent undesirable results as defined in the Plan, and proposes a set of projects and management actions that will likely achieve the sustainability goal defined for the Subbasin.[3] Department staff will continue to monitor and evaluate the Subbasin's progress toward achieving the sustainability goal through annual reporting and future periodic evaluations of the GSP and its implementation.

- ***Based on the current evaluation of the Plan, Department staff recommend the GSP be approved with the recommended corrective actions described herein.***

This assessment includes five sections:

- **Section 1 – Summary:** Provides an overview of Department staff's assessment and recommendations.

[1] Water Code § 10720 *et seq*.
[2] 23 CCR § 350 *et seq*.
[3] 23 CCR § 350 *et seq*.

- **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 an 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

Department staff recommend approval of the Elsinore Valley Subbasin GSP. The GSA has identified areas for improvement of its Plan (e.g., expanding monitoring networks to improve spatial coverage, which includes installing wells dedicated solely for monitoring groundwater levels and wells/piezometers for monitoring shallow groundwater levels; addressing data gaps related to well construction information; conducting studies to improve understanding of groundwater dependent ecosystems and the correlation between arsenic concentrations in groundwater with depth; and optimizing the Subbasin's data management system). Department staff concur that those items are important and recommend the GSA address them as soon as possible. Department staff have also identified additional recommended corrective actions within this assessment that the GSA should consider addressing by the first Periodic Evaluation of the Plan. The recommended corrective actions generally focus on the following:

(1) Identifying and describing measures that will be taken to address data gaps in the hydrogeological conceptual model to reduce uncertainty.

(2) Conducting necessary investigations or studies to assess the connectivity of perched groundwater to the principal aquifer in the Lake Elsinore Management Area.

(3) Explaining the rationale for the criteria selected to quantitatively define undesirable results for chronic lowering of groundwater levels.

(4) Assessing potential impacts of the established minimum thresholds for chronic lowering of groundwater levels on private and domestic wells.

(5) Updating minimum thresholds and measurable objectives for chronic lowering of groundwater levels.

(6) Defining criteria that will be used to determine whether undesirable results related to degraded water quality are occurring.

(7) Establishing sustainable management criteria for arsenic.

(8) Clarifying criteria that will be used to determine whether undesirable results related to land subsidence are occurring.

(9) Continuing to fill data gaps, collecting additional monitoring data, coordinating with resources agencies and interested parties to understand beneficial uses and users that may be impacted by depletions of interconnected surface water caused by groundwater pumping, and potentially refine sustainable management criteria.

Addressing the recommended corrective actions identified in Section 5 of this assessment will be important to demonstrate, on an ongoing basis, that implementation of the Plan is likely to achieve the sustainability goal.

2 EVALUATION CRITERIA

The GSA submitted a single GSP to the Department to evaluate whether the Plan conforms to specified SGMA requirements[4] and is likely to achieve the sustainability goal for the Elsinore Valley Subbasin.[5] To achieve the sustainability goal for the Subbasin, 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.[6] Undesirable results must be defined quantitatively by the GSAs.[7] 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.[8]

For the GSP to be evaluated by the Department, it must first be determined that the Plan was submitted by the statutory deadline,[9] and that it is complete and covers the entire basin.[10] If these conditions are satisfied, the Department evaluates the Plan to determine whether it complies with specific SGMA requirements and substantially complies with the GSP Regulations.[11] 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.[12]

When evaluating whether the Plan is likely to achieve the sustainability goal for the Subbasin, 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.[13] 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.[14]

[4] Water Code §§ 10727.2, 10727.4.
[5] Water Code § 10733(a).
[6] Water Code § 10721(v).
[7] 23 CCR § 354.26 *et seq.*
[8] Water Code § 10733(c).
[9] 23 CCR § 355.4(a)(1).
[10] 23 CCR §§ 355.4(a)(2), 355.4(a)(3).
[11] 23 CCR § 350 *et seq.*
[12] 23 CCR § 355.4(b).
[13] 23 CCR § 351(h).
[14] 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.[15]

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.[16] The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.[17] 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.[18]

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment of the Plan.[19] The assessment is required to include a determination of the Plan's status.[20] The GSP Regulations define the three options for determining the status of a Plan: Approved,[21] Incomplete,[22] or Inadequate.[23]

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.[24] 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.[25] Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first periodic assessment.[26]

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, including standard or accepted professional and scientific methods and practices. The assessment does not require Department staff to recalculate or reevaluate technical information provided in the Plan or to perform its own geologic or

[15] 23 CCR § 355.4(b)(9).
[16] 23 CCR § 355.4(b)(6).
[17] 23 CCR § 355.4(b)(2).
[18] 23 CCR § 355.4(b)(10).
[19] Water Code § 10733.4(d); 23 CCR § 355.2(e).
[20] Water Code § 10733.4(d); 23 CCR § 355.2(e).
[21] 23 CCR § 355.2(e)(1).
[22] 23 CCR § 355.2(e)(2).
[23] 23 CCR § 355.2(e)(3).
[24] Water Code § 10733.4(d).
[25] Water Code § 10733.8.
[26] 23 CCR § 356.4 *et seq*.

engineering analysis of that information. The staff recommendation to approve a Plan does not signify that Department staff, were they to exercise the professional 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.[27] Also, GSAs have an ongoing duty to provide reports to the Department, periodically reassess their plans, and, when necessary, update or amend their plans.[28] 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.

3 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline. The GSP must also be complete and must, either on its own or in coordination with other GSPs, cover the entire basin.

3.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority and not subject to critical conditions of overdraft to submit a GSP no later than January 31, 2022.[29]

The GSA submitted its Plan on January 26, 2022.

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.[30]

The GSA submitted an adopted GSP for the entire Subbasin. After an initial, preliminary review, Department staff found the GSP to be complete and appearing to include the

[27] Water Code § 10733.8; 23 CCR § 355.6.
[28] Water Code §§ 10728 *et seq.*, 10728.2.
[29] Water Code § 10720.7(a)(2).
[30] 23 CCR § 355.4(a)(2).

required information, sufficient to warrant a thorough evaluation by the Department.[31] The Department posted the GSP to its website on February 7, 2022.[32]

3.3 Basin Coverage

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.[33] A GSP that is intended to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting GSAs.

The GSP intends to manage the entire Elsinore Valley Subbasin and the jurisdictional boundary of the submitting GSA fully contains the Subbasin.[34]

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's assessment is based on a number of related factors including whether the elements of a GSP were developed in the manner required by the GSP Regulations, whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable, and whether the GSP, through the implementation of clearly defined and technically feasible projects and management actions, is likely to achieve a tenable sustainability goal for the basin. The Department staff's evaluation of the likelihood of the Plan to attain the sustainability goal for the Subbasin is provided below.

4.1 Administrative Information

The GSP Regulations require each Plan to include administrative information identifying the submitting Agency, its decision-making process, and its legal authority;[35] a description of the Plan area and identification of beneficial uses and users in the Plan area;[36] and a description of the ability of the submitting Agency to develop and implement a Plan for that area.[37]

The Plan provides administrative information identifying the submitting agency as the Elsinore Valley GSA, the sole GSA in the Subbasin, made up of the Elsinore Valley

[31] The Department undertakes a preliminary completeness review of a submitted Plan under section 355.4(a) of the GSP Regulations to determine whether the elements of a Plan required by SGMA and the Regulations have been provided, which is different from a determination, upon review, that a Plan is "incomplete" for purposes of section 355.2(e)(2) of the Regulations.
[32] https://sgma.water.ca.gov/portal/gsp/preview/119.
[33] Water Code § 10727(b); 23 CCR § 355.4(a)(3).
[34] Elsinore Valley GSP, Section 2.1, p. 37 and Figure 2.2, p. 41.
[35] 23 CCR § 354.6 *et seq*.
[36] 23 CCR § 354.8 *et seq*.
[37] 23 CCR § 354.6(e).

Municipal Water District.[38] The Plan describes in an understandable format, the Plan area (Elsinore Valley Subbasin), the legal authority of the GSA and its ability to manage groundwater in the Subbasin, and identifies beneficial uses and users present in the Subbasin, as summarized below.

The Elsinore Valley Subbasin covers an area of approximately 23,600 acres (37 square miles) within the Santa Ana River Watershed, in the western portion of Riverside County. The Subbasin is bounded by the Santa Ana and Elsinore Mountains to the south and west, non-water bearing rocks of the Peninsular Ranges, including the Temescal Mountains to the north and east, and by two adjacent basins/subbasins: the Bedford-Coldwater Subbasin to the northwest and the Temecula Valley Basin to the southeast. Surface water features include Lake Elsinore, Lee Lake, the San Jacinto River which is dammed upstream at Canyon Lake spills over into Lake Elsinore during heavy storms, and Temescal Wash, which drains from Lake Elsinore to the northwest towards the Santa Ana River and is ephemeral for most of its length. There are also several creeks that run down the surrounding canyons into the Subbasin. A map showing the location of the Subbasin and adjacent basins is presented as Figure 1 below.

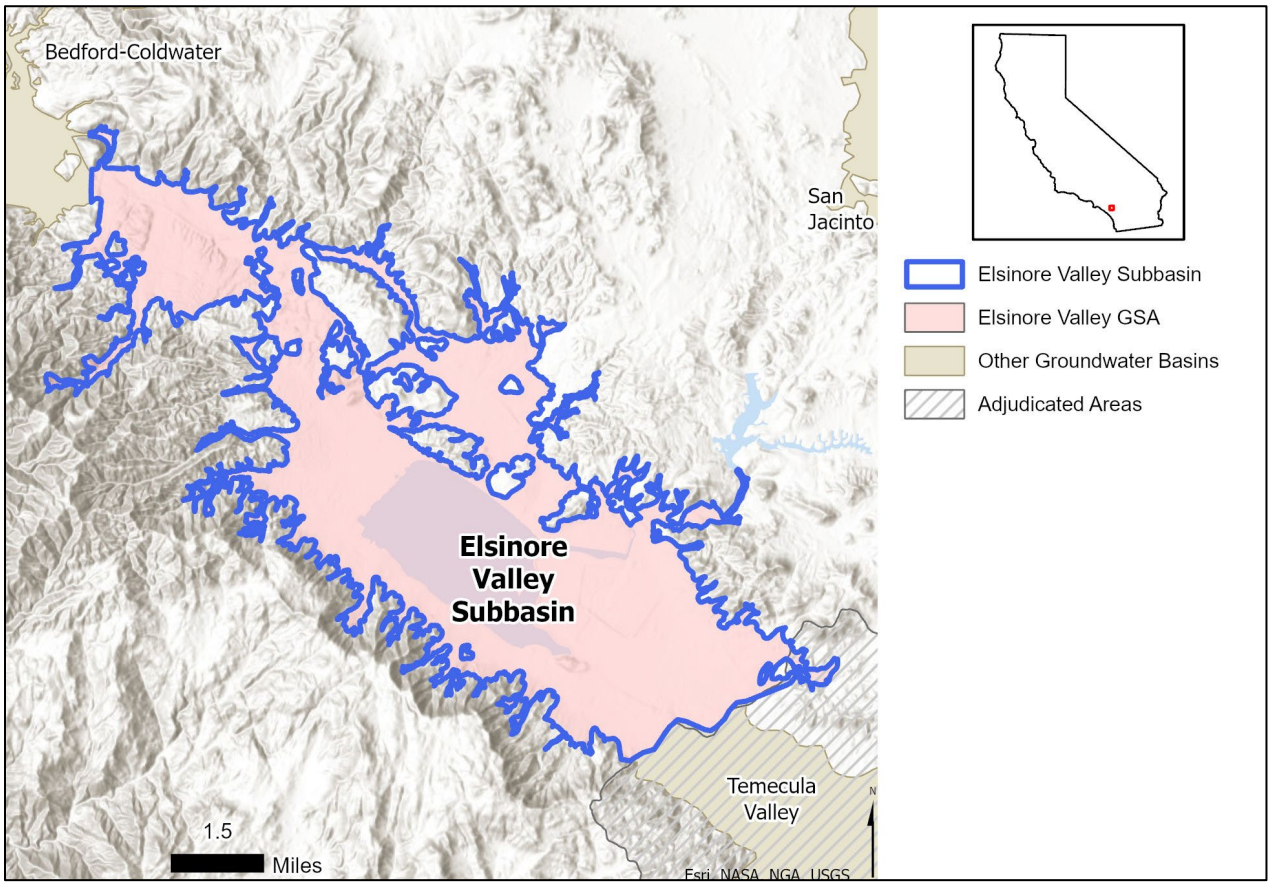

Figure 1: Elsinore Valley Subbasin Location Map

[38] Elsinore Valley GSP, Section 1.2 through 1.3, pp. 33-35.

Based on information presented in the Plan, non-vacant land in the Subbasin is used for residential (approximately 39%), industrial (approximately 8%), and agricultural (approximately 5%) purposes; non-vacant land is defined as the Plan area minus vacant land area and the area occupied by Lake Elsinore.[39] Disadvantaged communities and severely disadvantaged communities are present in the Subbasin, and make up about 36% and 20% of the Subbasin's population, respectively.[40]

The Plan states that Riverside County has jurisdiction for land use planning for un-incorporated areas of the Subbasin and also has responsibility for small water systems. Other jurisdictional boundaries within the Subbasin include the City of Lake Elsinore, the City of Canyon Lake, the City of Wildomar, and small areas of federal land. There are no state or tribal lands in the Subbasin.[41]

The Plan identifies four types of beneficial uses and users of groundwater in the Subbasin: municipal, industrial, agricultural, and domestic.[42]

The Subbasin relies mostly on imported water for its water supply. [43] The largest sources of imported water are the State Water Project and Colorado River Water. Smaller amounts are imported from the Coldwater portion of the adjacent Bedford-Coldwater Subbasin and from the Canyon Lake Reservoir. Imported water has ranged from 14,000 to 25,000 acre-feet per year during the past 15 years. [44] Imported water accounts for approximately 68% of the Subbasin's water supply, while groundwater accounts for approximately 23%, and local surface water accounts for the remaining 9%. The largest water use sector in the Subbasin is the urban water use (primarily residential use). Water supply for the majority of the population in the Subbasin is provided by the Elsinore Valley Municipal Water District.[45]

Based on water budget information presented in the Plan, approximately 95% of the groundwater pumped in the Subbasin from 1990 to 2018 was for municipal, industrial, and domestic use (with municipal accounting for most of the extracted groundwater). The remaining approximately 5% of extracted groundwater was used for agriculture.[46] Some recycled water is also used in the Subbasin for landscape irrigation and for maintaining water levels in Lake Elsinore and maintaining riparian habitat in the Temescal Wash. [47]

The Plan includes information on existing groundwater and surface water monitoring conducted by various entities, including existing water management plans and regulatory

[39] Elsinore Valley GSP, Section 2.4.3, pp. 58-61.
[40] Elsinore Valley GSP, Section 2.3.6, p. 47.
[41] Elsinore Valley GSP, Sections 2.3.4 and 2.3.5, p. 47.
[42] Elsinore Valley GSP, Section 3.11.1 through 3.11.3, p. 122.
[43] Elsinore Valley GSP, Section 2.4.1, p. 51.
[44] Elsinore Valley GSP, Section 5.6, p. 211.
[45] Elsinore Valley GSP, Section 2.4.1, p. 51.
[46] Elsinore Valley GSP, Table 5.4, p. 221.
[47] Elsinore Valley GSP, Section 2.4.2.4, pp. 57-58.

programs currently operating in the Subbasin.[48] As detailed in the Plan, groundwater monitoring and management actions have been ongoing in the Subbasin for several years. The GSA intends to support existing groundwater management efforts and build upon them to achieve sustainable groundwater management in the Subbasin. The Plan relies upon the existing groundwater monitoring and management programs operating in the Subbasin to describe groundwater conditions, water budgets, and to establish sustainable management criteria and monitoring networks.

The Plan describes in sufficient detail the organizational structure of the GSA and its legal authority to manage groundwater in the Subbasin, and finance projects and management actions. As a single GSA consisting only of the Elsinore Valley Municipal Water District, all decisions are made through the Elsinore Valley Municipal Water District's board of directors, which consists of five members elected to four-year staggered terms.[49]

The Plan states that GSP implementation costs include administrative and projects/management actions costs and will be funded by the Elsinore Valley Municipal Water District and grants (if available). The Plan provides cost estimates for Annual Reports and the first Periodic Evaluation, which based on information provided, amounts to a total of approximately $900,000 for the first five years of GSP implementation. The Plan also provides cost estimates for two proposed technical studies: synoptic study on groundwater dependent ecosystems (GDEs) in the Temescal Wash and the arsenic leaching study. The Plan estimates these studies to cost approximately $400,000 (i.e., $200,000 each). [50] Additionally, the Plan includes capital cost estimates for the planned projects and management actions, which add up to at least $80M.[51]

Department staff note that the Plan seems to indicate that an Annual Report will not be required in the year that the Periodic Evaluation is submitted,[52] which is incorrect. The GSA is required to submit an Annual Report by April 1 of every year. Annual Reports[53] and Periodic Evaluations[54] serve different purposes. The Department is developing a guidance document that is intended to provide clarity regarding SGMA and GSP Regulations requirements as they relate to Annual Reports, Periodic Evaluations, and Plan Amendments. Staff encourage the GSA to use the guidance when it becomes publicly available.

The Plan describes the GSA's communication and public engagement efforts during the Plan development phase[55] and includes a Stakeholder Outreach Plan which describes the communication and public involvement approach that the GSA intends to use during

[48] Elsinore Valley GSP, Section 2.5 through 2.6, pp. 61-79.
[49] Elsinore Valley GSP, Section 1.3.1 and 1.3.2, p. 35.
[50] Elsinore Valley GSP, Section 10.2.1, p. 352.
[51] Elsinore Valley GSP, Table 10.1, pp. 352-353.
[52] Elsinore Valley GSP, Section 10.2.1, p. 352.
[53] Water Code § 10728; 23 CCR § 356.2
[54] Water Code § 10728.2; 23 CCR § 356.4
[55] Elsinore Valley GSP, Section 1.2.1, pp. 33-34.

the Plan implementation phase.[56] The GSA provides a list of public meetings where the Plan was discussed or considered,[57] including public comments and how they were addressed.[58]

Department staff conclude that the administrative information included in the Plan substantially complies with the requirements outlined in 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 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.[59]

4.2.1 Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a non-numerical model of the physical setting, characteristics, and processes that govern groundwater occurrence within a basin, and represents a local agency's understanding of the geology and hydrology of the basin that support the geologic assumptions used in developing mathematical models, such as those that allow for quantification of the water budget.[60] The GSP Regulations require a descriptive hydrogeologic conceptual model that includes a written description of geologic conditions, supported by cross sections and maps,[61] and includes a description of basin boundaries and the bottom of the basin,[62] principal aquifers and aquitards,[63] and data gaps.[64]

The Plan includes a description of the geology of the Subbasin, including its regional geologic and structural setting, lateral and vertical extents, principal aquifers and their associated geologic formations and uses, recharge and discharge areas, soils, and pertinent geologic structures. The Plan provides supporting maps and cross sections and also identifies components of the hydrogeologic conceptual model that warrant refinement. [65]

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[56] Elsinore Valley GSP, Appendix C, pp. 391-407.
[57] Elsinore Valley GSP, Appendix D, pp. 409-481.
[58] Elsinore Valley GSP, Appendix E, pp. 483-622.
[59] 23 CCR § 354.12.
[60] DWR Best Management Practices for the Sustainable Management of Groundwater: Hydrogeologic Conceptual Model, December 2016: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-3-Hydrogeologic-Conceptual-Model_ay_19.pdf.
[61] 23 CCR §§ 354.14 (a), 354.14 (c).
[62] 23 CCR §§ 354.14 (b)(2-3).
[63] 23 CCR § 354.14 (b)(4) *et seq.*
[64] 23 CCR § 354.14 (b)(5).
[65] Elsinore Valley GSP, Section 3.1 through 3.12, pp. 89-122.

The Subbasin is situated within one of the structural blocks of the Peninsular Ranges of southern California and within a fault zone. It lies in a valley (between the Santa Ana and Elsinore Mountains on the west and the Temescal Mountains, Perris Plain, and Gavilan Plateau on the east), which was formed by differential movement between parallel strike slip faults to form a pull-apart depression.[66]

The Subbasin's lateral extent is defined by the contact between alluvium and the low permeability bedrock which surrounds the Subbasin. The bottom of the Subbasin is defined by various low permeability bedrock formations. The Plan states that the Subbasin has a complex geology and structural setting, and the Subbasin bottom is expected to be highly variable.[67]

The Plan defines three hydrologic areas in the Subbasin – the Lake Elsinore, Lee Lake, and Warm Springs hydrologic areas. The Lake Elsinore hydrologic area is the largest and deepest area of the Subbasin and is where most of the Subbasin's groundwater production occurs. Depth to bedrock in the Lake Elsinore hydrologic area is reported to range from approximately 200 to 2,800 feet. In the Lee Lake hydrologic area, depth to bedrock is reported to range from approximately less than 50 feet to approximately 200 to 400 feet. Depth to bedrock in the Warm Springs hydrologic area is reported to be less than 50 feet and as being variable and uncertain in some areas. The Plan states that other investigations have previously estimated local depths between 600 and 1,000 feet; however, recent drilling showed depths to bedrock to be less than 50 feet.[68]

The Plan identifies a single principal aquifer within each of the three hydrologic areas. The principal aquifer in the Lake Elsinore hydrologic area is characterized by alluvium and the Pauba Formation. The principal aquifer in the Lee Lake hydrologic area is characterized by alluvium along the Temescal Wash; the Jurassic Bedford Formation underlies the alluvial deposits in this hydrologic area and is reported to have some groundwater production potential. In the Warm Springs hydrologic area, the principal aquifer is characterized by alluvium, surficial alluvial fan, and fluvial deposits; the Silverado Formation underlies the alluvial deposits in this hydrologic area and is reported to have limited groundwater production potential. The Warm Springs hydrologic area is reported to be connected to both the Lake Elsinore and Lee Lake hydrologic areas, through the Temescal Wash. The Lake Elsinore and Lee Lake areas are reported to have limited hydraulic connection.[69]

The Plan identifies shallow bedrock at the boundaries with the adjacent Temecula Valley Basin and Bedford-Coldwater Subbasin, as geologic structures that restrict groundwater flow. Therefore, the Subbasin is reported to have limited hydraulic connectivity with the adjacent basin and subbasin. The Plan also identifies some of the faults present in the

[66] Elsinore Valley GSP, Section 3.4, p. 99.
[67] Elsinore Valley GSP, Section 3.6.3, pp. 105-106, and Section 3.8, p. 106.
[68] Elsinore Valley GSP, Section 3.8, p. 106, and Figure 3.6 through 3.9 , pp. 109-119.
[69] Elsinore Valley GSP, Section ES.3, p. 26, and Section 3.6.1.1 through 3.6.1.3, pp. 104-105.

Subbasin as geologic structures that restrict groundwater flow.[70] Discontinuous clay deposits that are commonly present in the Lake Elsinore hydrologic area are described as structures that restrict vertical movement of groundwater and limit the hydraulic connection between Lake Elsinore and the underlying aquifer materials.[71]

As stated in the Plan, the primary use of groundwater from the principal aquifer in the Lake Elsinore hydrologic area is municipal use; some groundwater is also used for domestic supply. The primary use of groundwater from the principal aquifer in the Lee Lake hydrologic area is municipal and domestic; historically, some groundwater has been pumped in this area to support agricultural and industrial uses. The primary use of groundwater from the principal aquifer in the Warm Springs hydrologic area is municipal and domestic; however, the Plan points out that there is little groundwater use in the Warm Springs hydrologic area.

The Plan states that recharge for the Subbasin comes from infiltration of runoff from precipitation on the surrounding hills and mountains and discharge from the Subbasin is almost entirely from groundwater pumping.[72]

The Plan describes components of the Subbasin's hydrogeological conceptual model that need refinement, which relate to a lack of mapping information for the Subbasin bottom,[73] storativity or storage coefficient information being unknown for most of the Subbasin,[74] and most of the wells in the Subbasin not extending deep enough to document the full thickness of the water bearing materials in the deepest areas of the subbasin.[75] The Plan states that there are no "SGMA data gaps" in the hydrogeologic conceptual model, but that the components of the hydrogeological conceptual model identified as needing improved understanding may be refined as additional data is collected.[76] Department staff consider the lack of sufficient information to document the full thickness of water bearing materials and the Subbasin's storativity/storage coefficient to be data gaps that warrant further study to reduce uncertainty in the hydrogeologic conceptual model. Staff recommend the Plan identify measures that the GSA will take to refine the hydrogeological conceptual model and provide a schedule to fill the identified data gaps (see Recommended Corrective Action 1).

Overall, Department staff conclude that the information provided to characterize the hydrogeologic conceptual model substantially complies with the requirements outlined in the GSP Regulations. In general, the Plan's descriptions of the regional geologic setting, the Subbasin's physical characteristics, the principal aquifer, and hydrogeologic conceptual model appear to utilize the best available information and science.

[70] Elsinore Valley GSP, Section 3.7, p. 106.
[71] Elsinore Valley GSP, Section 3.4.2.1, p. 100.
[72] Elsinore Valley GSP, Section 3.10, p. 121.
[73] Elsinore Valley GSP, Section 3.8, p. 106.
[74] Elsinore Valley GSP, Section 4.2, p.143.
[75] Elsinore Valley GSP, Section 3.9.3, p. 121.
[76] Elsinore Valley GSP, Section 3.12, p. 122.

Department staff are aware of no significant inconsistencies or contrary technical information to that presented in the Plan. However, staff encourage the GSA to address the recommended corrective action and continue refining the hydrogeologic conceptual model as new data becomes available during implementation of the Plan.

4.2.2 Groundwater Conditions

The GSP Regulations require a written description of historical and current groundwater conditions for each of the applicable sustainability indicators and groundwater dependent ecosystems that includes the following: groundwater elevation contour maps and hydrographs,[77] a graph depicting change in groundwater storage,[78] maps and cross-sections of the seawater intrusion front,[79] maps of groundwater contamination sites and plumes,[80] maps depicting total subsidence,[81] identification of interconnected surface water systems and an estimate of the quantity and timing of depletions of those systems,[82] and identification of groundwater dependent ecosystems.[83]

The GSA relied on groundwater data gathered under various programs and entities operating in the Subbasin for the period between 1990 and 2019 to characterize the Subbasin's groundwater conditions.[84] The Plan includes descriptions of current and historical groundwater conditions for each of the applicable sustainability indicator for the Subbasin.

The Plan provides information for current and historical groundwater elevations and flow directions within the Subbasin's principal aquifers, including hydrographs showing groundwater elevation trends and groundwater elevation contour maps. The hydrographs show that groundwater levels in the Lee Lake and Warm Springs hydrologic areas have generally been stable over time.[85] Groundwater levels in the Lake Elsinore hydrologic area had a declining trend from around the 1990s to about 2010.[86] However, since 2010, groundwater levels have been generally stable or rising, which is attributed to reduced pumping and in-lieu recharge from a conjunctive use program that was initiated in the Subbasin following implementation of a groundwater management plan.[87]

The groundwater elevation contour maps show that groundwater elevations in the Lee Lake hydrologic area ranged from approximately 1,050 to 1,150 feet mean sea level (msl) during fall 2015 and from approximately 1,100 to 1,150 feet msl during spring 2017. In the Warm Springs area, groundwater elevations ranged from approximately 1,200 to

[77] 23 CCR §§ 354.16 (a)(1-2).
[78] 23 CCR § 354.16 (b).
[79] 23 CCR § 354.16 (c).
[80] 23 CCR § 354.16 (d).
[81] 23 CCR § 354.16 (e).
[82] 23 CCR § 354.16 (f).
[83] 23 CCR § 354.16 (g).
[84] Elsinore Valley GSP, Section 4, p. 125.
[85] Elsinore Valley GSP, Figure 4.3, p. 133; and Figure 4.4, p. 135.
[86] Elsinore Valley GSP, Figure 4.2, p. 129.
[87] Elsinore Valley GSP, Section 4.1.3.1, p. 126, and Section 5.7.2, p. 227.

1,250 feet msl during fall 2015 and was approximately 1,250 feet msl during spring 2017. In the Lake Elsinore hydrologic area, groundwater elevations ranged from approximately 700 to 1,200 feet msl during fall 2015 and from approximately 800 to 1,250 feet msl during spring 2017. The fall 2015 and spring 2017 groundwater elevation contour maps show that groundwater flow in the Lake Elsinore hydrologic area is influenced by pumping and forms cones of depression around pumped areas.[88]

The Plan provides change in groundwater storage information for the Subbasin that is derived by a numerical model: MODFLOW.[89] During the period from 1990 to 2018, the average change in groundwater storage is estimated to be a decrease of approximately 598 acre-feet per year in the Lake Elsinore area, an increase of approximately 41 acre-feet per year in the Lee Lake area, and an increase of approximately 46 acre-feet per year in the Warm Springs area.[90] The largest decrease in groundwater storage (1,723 acre-feet per year) occurred in the Lake Elsinore hydrologic area during the period from 1993 to 2007, which is consistent with the declining groundwater level trends observed during that period. During the current period (2010 to 2013), change in groundwater storage is estimated to be an increase of 4,466 acre-feet per year in the Lake Elsinore hydrologic area, a decrease of 14 acre-feet per year in the Lee Lake hydrologic area, and a decrease of 21 acre-feet per year in the Warm Springs area.[91] The minor changes in groundwater storage estimated for the Lee Lake and Warm Springs during the historical and current periods is consistent with the generally stable groundwater levels observed in these two hydrologic areas over time. Based on the current average change in groundwater storage information, the Subbasin is not experiencing overdraft conditions.

The Plan states that the Subbasin is located about 30 miles inland and the lowest groundwater elevations in the Subbasin are more than 1,000 feet above msl.[92] Therefore, seawater intrusion is unlikely to occur in the Subbasin. [93]

The Plan includes descriptions of current and historical groundwater quality conditions in the Subbasin,[94] along with maps of where groundwater quality issues are observed,[95] and trend graphs for constituents of concern.[96] Degradation of groundwater quality in the Subbasin is reported to be from both point and non-point sources. The Plan identifies nitrate, total dissolved solids (TDS), arsenic, iron, and manganese as historically being the prevalent non-point source constituents detected in the Subbasin's groundwater at concentrations exceeding regulatory limits. Of these, the Plan identifies nitrate, TDS, and

[88] Elsinore Valley GSP, Figure 4.5, p. 137, and Figure 4.6, p. 139.
[89] Elsinore Valley GSP, Section 4.2, p. 143.
[90] Elsinore Valley GSP, Table 5.4, p. 221.
[91] Elsinore Valley GSP, Table 5.4, p. 221.
[92] Elsinore Valley GSP, Section 4.10, p. 169.
[93] Elsinore Valley GSP, Section 4.10, p. 169.
[94] Elsinore Valley GSP, Section 4.4 through 4.9, pp. 147-169.
[95] Elsinore Valley GSP, Figure 4.11, p. 157; Figure 4.13, p. 161; and Figure 4.15, p. 165.
[96] Elsinore Valley GSP, Figure 4.12, p. 158; Figure 4.14, p. 163; and Figure 4.16, p. 167.

arsenic as the key constituents of concern in the Subbasin.[97] The Plan states that iron and manganese have not been detected above regulatory standards in recent times. The Plan also states that arsenic, along with iron and manganese, "are likely naturally occurring and may not be adversely affected by management actions in the Subbasin."[98] The Plan recommends continuing monitoring for these constituents.[99]

The Plan discusses point-source contamination sites present in the Subbasin, including large and small-scale wastewater treatment plants that pose a potential risk to groundwater quality. The Plan discusses actions being taken to address the point-source contamination and states that the point-source contamination sites are under the purview of the Santa Ana Regional Water Quality Control Board and/or Riverside County.[100] Department staff encourage the GSA to coordinate with the water quality regulatory agencies/entities overseeing the various point-source contamination sites in assessing whether groundwater management is affecting plume migration during Plan implementation.

The Plan states that inelastic land subsidence due to groundwater extraction has not been a known issue in the Subbasin. Relying on available Department Interferometric Synthetic Aperture Radar (InSAR) data, the Plan describes land subsidence conditions for the Subbasin for the period from June 2015 to September 2019 and includes a map showing the extent of subsidence.[101] Based on the information presented in the Plan, InSAR data for the period from June 2015 to September 2019 show land subsidence of up to 0.09 feet. The Plan states that the majority of the Subbasin is characterized by declines or rises between -0.025 to 0.025 feet for the June 2015 to September 2019 period.[102] Department staff note that the legend on the map provided on Figure 4.9 is missing subsidence range information; staff recommend the GSA update the legend to show the range of subsidence values for each color symbol depicted on the map.

Surface water features present in the Subbasin include Lake Elsinore, Lee Lake, Temescal Wash, a portion of the San Jacinto River and Arroyo Del Toro, and creeks such as the Horsethief Canyon Creek, Rice Canyon Creek, McVicker Canyon Creek, and the Leach Canyon Creek.[103]

The Plan uses groundwater level, stream flow, and vegetation information to identify and map areas with interconnected surface water in the Subbasin.[104] The Plan identifies a segment of the Temescal Wash and a segment of the Horsethief Canyon Creek as having

[97] Elsinore Valley GSP, Section 4.7 through 4.8, pp. 154-169.
[98] Elsinore Valley GSP, Section 4.7 through 4.8, p. 169.
[99] Elsinore Valley GSP, Section 4.7 through 4.8, p. 169.
[100] Elsinore Valley GSP, Section 4.6, pp. 153-154.
[101] Elsinore Valley GSP, Section 4.3, pp. 143-147, and Figure 4.9, p. 149.
[102] Elsinore Valley GSP, Section 4.3.1, p. 147.
[103] Elsinore Valley GSP, Figure 3.2, p. 93.
[104] Elsinore Valley GSP, Section 4.11.1 through 4.11.3, pp. 170-184.

interconnectivity with the principal aquifer.[105] The GSA recognizes that there are data gaps that prevent full understanding of the relationship between groundwater pumping, shallow groundwater levels, and groundwater dependent ecosystems (GDEs).[106] The GSA intends to fill these data gaps during Plan implementation.[107]

The Plan states that large downward vertical gradients are present near Lake Elsinore and south of the lake, with downward gradients approaching 1 foot/foot, suggesting that there may be an unsaturated zone between shallow and deep aquifer materials in this area.[108] The Plan further states that near Lake Elsinore, depth-to-groundwater in shallow wells is typically a few tens of feet, whereas depth-to-groundwater in deeper wells is typically 200 to 500 feet below ground surface at the same locations.[109] The Plan attributes the large downward vertical gradient to the presence of clay layers that were previous lakebed sediment deposited as the lake waxed and waned over geologic time. Given the large magnitude of downward gradients, the Plan deduces that there is likely a perched shallow zone unaffected by pumping and water levels in the deep aquifer units, but appear to be influenced by Lake Elsinore water levels, indicating that nearby wetlands and phreatophytic vegetation are sustained by surface water and not interconnected to the groundwater system.[110] Department staff recommend the GSA conduct investigations to assess the connectivity of perched groundwater to the deeper aquifer in the Lake Elsinore Management Area to confirm that perched groundwater is not affected by pumping in the principal aquifer (see Recommended Corrective Action 2).

The Plan includes discussion of GDEs and provides a map of riparian vegetation and critical habitat locations in the Subbasin. The GSP relied on The Nature Conservancy's Natural Communities Commonly Associated with Groundwater dataset to identify locations of GDEs, including review of the Western Riverside County Multiple Species Habitat Conservation Plan, aerial photos, and depth to groundwater.[111] The GSP identifies the absence of shallow well data to evaluate GDEs as a gap which will be address during Plan implementation.[112]

Overall, the Plan sufficiently describes the historical and current groundwater conditions for the sustainability indicators relevant to the Subbasin, based on what seems to be the best available science and information. The Plan also acknowledges data gaps that warrant further study. Therefore, Department staff conclude that the information included in the Plan regarding the Subbasin's groundwater conditions substantially complies with the requirements outlined in the GSP Regulations.

[105] Elsinore Valley GSP, Section 4.11.1, p. 176 and Figure 4.17, p. 171.
[106] Elsinore Valley GSP, Section 7.3, p. 295.
[107] Elsinore Valley GSP, Section 7.7.1.4, p. 311.
[108] Elsinore Valley GSP, Section 4.11.2, p. 176.
[109] Elsinore Valley GSP, Section 4.11.2, p. 176.
[110] Elsinore Valley GSP, Section 4.1.5 and 4.11.2, p. 132 and p. 176.
[111] Elsinore Valley GSP, Section 4.11.3 through 4.11.5, pp. 180-185, and Figure 4.20, p. 181.
[112] Elsinore Valley GSP, Section 7.3, p. 295, and Section 7.7.1.4, p. 311.

4.2.3 Water Budget

GSP Regulations require a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical; current; and projected water budget conditions,[113] and the sustainable yield.[114]

The Plan presents historical, current, and projected water budgets for each of the three hydrologic areas (also designated as management areas), evaluated using the MODFLOW numerical model. The water budgets describe an accounting of inflows and outflows for the surface water and groundwater systems, including groundwater storage changes and sustainable yield estimates, presented in tabular and/or graphical format.[115] However, Department staff note that the Plan does not include an annual tabular or graphical surface water budget for the projected water budgets; staff recommend the GSA include an annual tabular and graphical surface water budget for the projected water budgets by the first Periodic Evaluation of the Plan.

The water budgets are evaluated for five time periods, which include the following:

- A model period water budget evaluated for water years 1990 to 2018.
- A 25-year period water budget evaluated for water years 1993 to 2017.
- A historical water budget evaluated for water years 1993 to 2007.
- A current water budget evaluated for a period covering water years 2010 to 2013.
- A 50-year future projection water budget evaluated for water years 2019 to 2068.

For the groundwater system, the water budget representing hydrologic conditions from water years 1990 to 2018 estimates change in groundwater storage to be a decline of 598 acre-feet per year in the Lake Elsinore area, an increase of 46 acre-feet per year in the Warm Springs area, and an increase of 41 acre-feet per year in the Lee Lake area.[116] Aggregating the change in storage for the three management areas results in a net decline in groundwater storage of 511 acre-feet per year for the Subbasin as a whole, for the period covering water years 1990 to 2018.

The groundwater budget for the 25-year period (1993-2017) estimates change in groundwater storage to be a decline of 577 acre-feet per year in the Lake Elsinore area, an increase of 46 acre-feet per year in the Warm Springs area, and an increase of 94 acre-feet per year in the Lee Lake area,[117] resulting in a net decline in groundwater storage of 437 acre-feet per year for the Subbasin as a whole.

[113] 23 CCR §§ 354.18 (a), 354.18 (c) *et seq*.
[114] 23 CCR § 354.18 (b)(7).
[115] Elsinore Valley GSP, Section 5.1 through 5.9, pp. 187-233.
[116] Elsinore Valley GSP, Table 5.4, p. 221.
[117] Elsinore Valley GSP, Table 5.4, p. 221.

The historical groundwater budget estimates change in groundwater storage to be a decline of 1,723 acre-feet per year in the Lake Elsinore area, an increase of 66 acre-feet per year in the Warm Springs area, and an increase of 156 acre-feet per year in the Lee Lake area.[118] For the Subbasin as a whole, the change in groundwater storage for the historical period (1993 to 2007) is a net decline of approximately 1,500 acre-feet per year. Department staff note that the Plan evaluates the historical water budget utilizing hydrologic conditions for the period covering water years 1993 to 2007 rather than using the most recent available data extended back a minimum of 10 years as required by the GSP Regulations. However, staff acknowledge that the Plan includes water budgets for the period covering water years 1990 to 2018 and water years 1993 to 2017, which satisfy the requirement.

The current groundwater budget estimates change in groundwater storage to be an increase of 4,466 acre-feet per year in the Lake Elsinore area, a decrease of 21 acre -feet per year in the Warm Springs area, and a decrease of 14 acre-feet per year in the Lee Lake area.[119] Considering the Subbasin as a whole, the change in groundwater storage for the current period is a net increase of approximately 4,431 acre-feet per year.[120]

The projected water budgets are evaluated for baseline conditions and for conditions that consider population growth and climate change. For the Subbasin as a whole, results show an increase in groundwater storage of approximately 1,160 acre-feet per year for the baseline conditions and an increase of approximately 891 acre-feet per year for projected conditions with population growth and climate change.

The Plan provides sustainable yield estimates for each management area and for the entire Subbasin, which are derived by adding the average annual groundwater pumped to the average annual change in groundwater storage. For the historical period, the sustainable yield for the Subbasin is estimated as 8,021 acre feet- per year. For the projected scenarios, the sustainable yield is estimated as 6,737 acre-feet per year for the baseline conditions and 8,683 acre feet- per year for conditions that factor in population growth and climate change. [121]

Department staff note that the sustainable yield estimates provided in the Plan do not seem to consider how avoiding undesirable results affects the maximum quantity of groundwater that can be extracted. Staff recommend that the GSAs determine the Subbasin's sustainable yield as the maximum quantity of water, calculated over a base period representative of long-term conditions in the Subbasin and including any temporary surplus, that can be withdrawn annually without causing undesirable results in the Subbasin.[122]

[118] Elsinore Valley GSP, Table 5.4, p. 221.
[119] Elsinore Valley GSP, Table 5.4, p. 221.
[120] Elsinore Valley GSP, Table 5.4, p. 221.
[121] Elsinore Valley GSP, Section 5.9, pp. 231-232.
[122] Water Code § 10721(w).

The Plan provides a quantitative evaluation of surface water availability or reliability, including timing and frequency of wastewater discharge to surface water, lake spills, tributary inflows, groundwater pumping to help maintain lake levels, and imported water availability and quantity estimates.[123]

Department staff conclude that the water budgets included in the Plan substantially comply with the requirements outlined in the GSP Regulations. The Plan provides the required historical, current, and future accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the Subbasin, including initial estimates of the sustainable yield of the Subbasin and projected future water demands, using the best available tools and information available at the time of preparation of the Plan.

4.2.4 Management Areas

The GSP Regulations provide the option for one or more management areas to be defined within a basin if the GSA has determined that the creation of the management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives, provided that undesirable results are defined consistently throughout the basin.[124]

The Plan establishes three management areas – Lake Elsinore Management Area, Lee Lake Management Area, and Warm Springs Management Area – which correspond to the three hydrologic areas defined in the Subbasin. The management areas are established based on differences in hydrogeologic and water use characteristics.[125]

The Plan establishes minimum thresholds for chronic lowering of groundwater levels for the central portion of the Lake Elsinore Management Area using a different method from that used for the rest of the Subbasin and provides sufficient justification for doing so.[126] The Plan states that the central portion of the Lake Elsinore Management Area is deeper than its peripheral areas and the Lee Lake and Warm Springs Management Areas. The Plan further states that most of the groundwater production in the Subbasin occurs in the Lake Elsinore Management Area and the extracted groundwater is used for municipal supply. Therefore, minimum thresholds for chronic lowering of groundwater levels in the central portion of the Lake Elsinore Management Area are established to protect the ability to pump from municipal supply wells. In the peripherical areas of the Lake Elsinore Management Area, and the Lee Lake and Warm Springs Management Areas, minimum thresholds are established to avoid negative impacts to other well types, including private and domestic wells.[127]

[123] Elsinore Valley GSP, Section 5.6, pp. 204-214.
[124] 23 CCR § 354.20.
[125] Elsinore Valley GSP, Section 3.11, p.122, and Section 5.4, p. 191.
[126] Elsinore Valley GSP, Section 6.2.5 and 6.2.6, pp. 243-249.
[127] Elsinore Valley GSP, Section 6.2.5 and 6.2.6, pp. 243-245.

The measurable objectives for chronic lowering of groundwater are established using the same methodology for the entire Subbasin.[128]

The Plan uses groundwater levels as a proxy for reduction of groundwater storage; thus, sustainable management criteria established for the chronic lowering of groundwater levels sustainability indicator apply to the reduction of groundwater storage sustainability indicator.

For the degraded water quality sustainability indicator, the Plan sets minimum thresholds for the Lake Elsinore Management Area that are different from those set for the Lee Lake and Warm Springs Management Area. The minimum thresholds for each management area are based on the antidegradation water quality standards established in the Water Quality Control Plan for the Santa Ana River Basin.[129] The measurable objectives for degraded water quality are defined using the same methodology across all three management areas.[130]

For the land subsidence and depletions of interconnected surface water sustainability indicators, the Plan establishes minimum thresholds and measurable objectives using the same methodologies and metrics across the entire Subbasin.[131]

The Plan includes discussion of how the management areas can operate under different minimum thresholds without causing undesirable results outside each management area,[132] which Department staff conclude to be reasonable. As required by the GSP Regulations, the Plan defines undesirable results for the chronic lowering of groundwater levels sustainability indicator (and the reduction of groundwater storage sustainability indicator by proxy) consistently throughout the Subbasin. However, the Plan does not define, in numerical terms, criteria that will be used to determine whether undesirable results related to degraded water quality and land subsidence are occurring. Department staff provide recommended corrective actions in Section 4.3.2.4 and Section 4.3.2.5 of this Staff Report.

The Plan establishes management area-specific monitoring networks to capture each sustainability indicator relevant to the Subbasin. The GSA has identified areas where additional monitoring sites are warranted to fill data gaps and intends to expand and refine monitoring networks during Plan implementation.[133]

Based on review of the Plan's content related to management areas, Department staff conclude that the Plan's discussion and presentation of information for the management areas substantially complies with the specific items listed in the GSP Regulations.

[128] Elsinore Valley GSP, Section 6.2.7, p. 251.
[129] Elsinore Valley GSP, Section 6.5.6.1 and 6.5.6.2, pp. 262-263.
[130] Elsinore Valley GSP, Section 6.5.7.1, p. 265.
[131] Elsinore Valley GSP, Section 6.5.6.7, p. 264, and Section 6.6.4.5, p. 269.
[132] Elsinore Valley GSP, Section 6.2.6.6, p. 251.
[133] Elsinore Valley GSP, Section 6.2.6, p. 245; Section 6.7.8, pp. 287-288, and Section 7.7, pp. 310-312.

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. The GSP Regulations require each Plan to define conditions that constitute sustainable groundwater management for the basin including the process by which the GSA characterizes undesirable results and establishes minimum thresholds and measurable objectives for each applicable sustainability indicator.[134]

4.3.1 Sustainability Goal

GSP Regulations require that GSAs establish a sustainability goal for the basin. The sustainability goal should be based on information provided in the GSP's basin setting and should include an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation.[135]

As stated in the Plan, the sustainability goal for the Elsinore Valley GSA is "to manage the Elsinore Valley Subbasin to provide sustainably and adequately for all beneficial uses within the Subbasin over wet and dry climatic cycles."[136]

The Plan states that the approach for assessing sustainability indicators and establishing sustainable management criteria in the Subbasin relied on review of available information from the Plan area, hydrogeologic conceptual model, groundwater conditions, and water budget sections of the GSP, and included discussions with interested parties and local agency representatives, including discussions from Technical Advisory Committee meetings and project workshops.[137]

The Plan further states that the Subbasin has been, and is being managed sustainably, relative to all sustainable management criteria.[138] Therefore, the Plan describes an approach to maintain sustainability through the planning and implementation horizon that includes continuation and improvement of existing management actions (e.g., importation of Colorado River and State Water Project water and its existing conjunctive use program); improvement and expansion of monitoring network systems to track hydrologic conditions and ensure the Subbasin is operated within its sustainable yield; and implementation of projects and management actions using a flexible and adaptive management approach.[139]

Based on the information provided in the Plan relating to the sustainability goal, Department staff conclude that the Plan substantially complies with the GSP Regulations.

[134] 23 CCR § 354.22 *et seq*.
[135] 23 CCR § 354.24.
[136] Elsinore Valley GSP, Section 6.1.1, p. 236.
[137] Elsinore Valley GSP, Section 6.1.2, p. 236.
[138] Elsinore Valley GSP, Section 6.1.3, p. 237.
[139] Elsinore Valley GSP, Section 8.2.1 through 8.4.3, pp. 314-345.

4.3.2 Sustainability Indicators

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results.[140] Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon, significant and unreasonable reduction of groundwater storage, significant and unreasonable seawater intrusion, significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water[141] – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather, sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

GSP Regulations require that GSAs provide descriptions of undesirable results including defining what are significant and unreasonable potential effects to beneficial uses and users for each sustainability indicator.[142] GSP Regulations also require GSPs provide the criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.[143]

GSP Regulations require that the description of minimum thresholds include the information and criteria relied upon to establish and justify the minimum threshold for each sustainability indicator.[144] GSAs are required to describe how conditions at minimum thresholds may affect beneficial uses and users,[145] and the relationship between the minimum thresholds for each sustainability indicator, including an explanation for how the GSA has determined conditions at each minimum threshold will avoid causing undesirable results for other sustainability indicators.[146]

GSP Regulations require that GSPs include a description of the criteria used to select measurable objectives, including interim milestones, to achieve the sustainability goal within 20 years.[147] GSP Regulations also require that the measurable objectives be

[140] 23 CCR § 351(ah).
[141] Water Code § 10721(x).
[142] 23 CCR §§ 354.26 (a), 354.26 (b)(c).
[143] 23 CCR § 354.26 (b)(2).
[144] 23 CCR § 354.28 (b)(1).
[145] 23 CCR § 354.28 (b)(4).
[146] 23 CCR § 354.28 (b)(2).
[147] 23 CCR § 354.30 (a).

established based on the same metrics and monitoring sites as those used to define minimum thresholds.[148]

The following subsections thus consolidate three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information, as presented in the Plan, pertaining to the processes and criteria relied upon to define undesirable results applicable to the Subbasin, as quantified through the establishment of minimum thresholds, are addressed for each applicable sustainability indicator. A submitting agency is not required to establish criteria for undesirable results that the agency can demonstrate are not present and are not likely to occur in a basin.[149]

4.3.2.1 Chronic Lowering of Groundwater Levels

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the chronic lowering of groundwater, the GSP Regulations require the minimum threshold for chronic lowering of groundwater levels to be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results that is supported by information about groundwater elevation conditions and potential effects on other sustainability indicators.[150]

The Plan describes undesirable results associated with chronic lowering of groundwater levels as occurring when groundwater levels decline to a point that negatively impacts production wells and other sustainability indicators.[151] The Plan also describes potential effects of undesirable results associated with chronic lowering of groundwater levels on beneficial uses and users, which include, dewatering of wells which could result in increased operation and maintenance costs; increased pumping lift and energy costs; reduction in pump suction and output; reduction of the lifespan of wells due to corrosion of well casings and screens; and pump damage.[152]

The Plan states that "[for] purposes of setting [a minimum threshold], undesirable results are defined as a well pump losing suction."[153] The Plan describes conditions that would cause undesirable results as including reduction of surface and imported water supplies, which would result in increased demand for groundwater and lowering of groundwater levels.[154]

The Plan quantitatively defines undesirable results for chronic lowering of groundwater levels as occurring "when four consecutive quarterly exceedances occur in each of three consecutive years, in three-quarters or more of the [representative monitoring wells] in each [management area]."[155] The Plan appears to rationalize the criteria selected to

[148] 23 CCR § 354.30 (b).
[149] 23 CCR § 354.26 (d).
[150] 23 CCR § 354.28(c)(1) *et seq*.
[151] Elsinore Valley GSP, Section 6.2 and 6.2.1, p. 241.
[152] Elsinore Valley GSP, Section 6.2.1, p. 241.
[153] Elsinore Valley GSP, Section 6.2.1 p. 241.
[154] Elsinore Valley GSP, Section 6.2.2, p. 242.
[155] Elsinore Valley GSP, Section 6.1.3, p. 237, and Section 6.2.6.1, p. 249.

define undesirable results for chronic lowering of groundwater lowering by stating that the frequent monitoring of groundwater levels that the GSA conducts provides an early warning system that allows response from the GSA and local groundwater users. The Plan adds that "[Elsinore Valley GSA] responses do not have to wait for three years and may involve a staged response as in urban water shortage contingency plans."[156]

Department staff conclude the decision to set sustainable management criteria based on evaluating both spring and fall measurements may not adequately consider the interests of beneficial uses and users. The GSA's decision to set sustainable management criteria for the chronic decline of groundwater levels on a three-year span, and four consecutive quarterly exceedances, instead of focusing on the time of most impacts in late summer or fall, likely disregards potential impacts to beneficial uses and users from seasonal variations. Under this management decision, even if the GSA successfully maintains spring groundwater levels within the historical range, impacts to beneficial uses and users that occur during any other times of the year (as groundwater levels typically decline) appear to not be considered. The GSA should revise the sustainable management criteria to be based on seasonal low groundwater levels to ensure all potential impacts to beneficial uses and users are considered. Staff additionally recommend that the GSA explain its rationale for requiring 75% or more of representative monitoring wells to exceed minimum thresholds for twelve consecutive quarters before acknowledging that undesirable results are occurring, and why the occurrence of potential effects of undesirable results on beneficial uses and users for three years is deemed acceptable. If the GSA intends to respond to minimum threshold exceedances sooner than the three years specified in the undesirable results definition adopted in the Plan, the GSA should update the undesirable results criteria to align with the timeline of the trigger response (see Recommended Corrective Action 3).

The Plan establishes minimum thresholds for chronic lowering of groundwater levels based on the following two methods:

- For representative monitoring wells in the central portion of the Lake Elsinore Management Area, minimum thresholds are "defined by operational considerations to maintain pumping water levels sufficiently above current pump intakes in municipal water supply wells to avoid the cost of lowering pump bowls, adding pump stages, and increasing pumping energy usage."[157] The GSP states that minimum thresholds are set at 50 feet above the pump intakes.[158]

- For representative monitoring wells in the peripheral areas of the Lake Elsinore Management Area, and in the Lee Lake and Warm Springs Management Areas,

[156] Elsinore Valley GSP, Section 6.2.6.1, p. 249.
[157] Elsinore Valley GSP, Section 6.1.3, p. 237.
[158] Elsinore Valley GSP, Section 6.2.5.2, p. 244, and Table 6.1, pp. 246-247.

minimum thresholds are "defined by historical low groundwater levels rounded up to the nearest 5 [feet]."[159]

The Plan describes the process to establish the minimum thresholds as having included review of groundwater level data and supply well information (locations and construction details) to assess potential negative impacts on the wells. The Plan justifies the selected minimum thresholds by explaining that the central portion of the Elsinore Management Area where most of the productive municipal water supply wells are located, is much deeper and generally independent from the rest of the Subbasin, and groundwater level declines in this area only affects municipal water supply wells operated by the Elsinore Valley Municipal Water District; undesirable results are not anticipated as long as operability of the wells can be maintained.[160] The Plan further explains that undesirable results associated with chronic lowering of groundwater levels were not reported in the Subbasin when groundwater elevations were at their historical low levels. Therefore, minimum thresholds set at the historical low levels for the peripheral areas of the Lake Elsinore Management Area, and the Lee Lake and Warm Springs Management Areas, are not anticipated to cause undesirable results in the future.[161]

The Plan includes descriptions of the relationship between the groundwater level minimum thresholds and other sustainability indicators relevant in the Subbasin. The GSA does not expect the selected minimum thresholds to negatively impact other sustainability indicators. [162] The Plan also includes discussion of potential effects of the selected minimum thresholds on beneficial uses and users. The GSA does not anticipate the established minimum thresholds to negatively impact supply wells because as explained above, the minimum thresholds are based on pump operational considerations and on historical low levels which did not lead to undesirable results based on a lack of reported issues previously.[163] The Plan acknowledges that data gaps related to well location and well construction information for private and domestic wells prevents the GSA from fully assessing impacts of the established minimum thresholds on these wells.[164] The GSA intends to address these data gaps during GSP implementation.[165]

Department staff support the GSA's planned efforts to address data gaps related to well information in the Subbasin. Once the data gaps are addressed, staff recommend the GSA assess the potential impacts to supply wells, including private and domestic wells, in the peripheral areas of the Lake Elsinore Management Area, and the Lee Lake and Warm Springs Management Areas, at the proposed minimum thresholds for chronic lowering of groundwater levels and document the degree/extent of the potential impacts,

[159] Elsinore Valley GSP, Section 6.1.3, p. 237 and Table 6.1, pp. 246-247.
[160] Elsinore Valley GSP, Section 6.2.5, p. 243.
[161] Elsinore Valley GSP, Section 6.2.5, p. 243.
[162] Elsinore Valley GSP, Section 6.2.6.2, p. 250.
[163] Elsinore Valley GSP, Section 6.2.6.4., p. 251, and Section 6.2.5.2, p. 244.
[164] Elsinore Valley GSP, Section 6.2.1, p. 241.
[165] Elsinore Valley GSP, Section 6.2.6, p. 245.

including the percentage, number, and location of potentially impacted wells (see Recommended Corrective Action 4).

The Plan states "[measurable objectives] are defined herein as an operating range of groundwater levels, allowing reasonable fluctuations with changing hydrologic and surface water supply conditions and with conjunctive management of surface water and groundwater. The historical low groundwater levels in each [representative monitoring well] is the bottom of the operating range. The top of the operating range is generally where the water table approaches the soil zone and ground surface, except where groundwater and surface water are interconnected, or GDEs exist."[166]

The Plan presents in tabular format (Table 6.1), the minimum thresholds and measurable objectives for chronic lowering of groundwater levels, including available well construction information, as depths below ground surface (bgs) rather than as elevations relative to the North American Vertical Datum of 1988. Based on review of the information presented in Table 6.1, Department staff note the following:

- The historical maximum depth to groundwater for the Lincoln well in the Lake Elsinore Management Area is shown as 324 feet bgs and the minimum threshold is shown as 350 feet bgs, which does not represent the value that would be obtained if 324 feet is rounded up to the nearest 5 feet. Staff recommend the GSA explain why the tabulated minimum threshold value (350 feet bgs) is greater than the value that would result if 324 feet bgs is rounded up to the nearest 5 feet (i.e., 330 feet bgs), or provide the correct value if the presented minimum threshold value is a typographical error.
- The Plan defines the measurable objectives for groundwater levels as a range; however, the measurable objectives presented in Table 6.1 are not shown as ranges, but rather only as a historical maximum depth to groundwater observed at each representative monitoring well.[167] Staff recommend the GSA update the measurable objectives information in Table 6.1 to be consistent with the Plan's definition of measurable objectives.
- The measurable objective groundwater levels for four representative monitoring wells (Terra Cotta, Cereal 1, Cereal 3, and Olive) in the Lake Elsinore Management Area are set below their respective minimum threshold levels. This is incorrect because measurable objectives for groundwater levels refer to specific, quantifiable goals for the maintenance or improvement of groundwater levels to achieve the sustainability goal for the Subbasin, while minimum thresholds for groundwater levels are used to define undesirable results. Therefore, groundwater levels representing measurable objectives cannot be below groundwater levels representing minimum thresholds.

[166] Elsinore Valley GSP, Section 6.2.7, p. 251.
[167] Elsinore Valley GSP, Table 6.1, pp. 246-248.

- The measurable objective for two wells (Station 70 and Barney Lee 2) are set at the same levels as the minimum threshold levels, thereby providing no margin of operational flexibility. The operational flexibility for wells where minimum thresholds are set as the maximum historical low levels ranges from 0 to 5 feet, based on the measurable objectives presented.
- Well construction information is lacking for several of the representative monitoring wells; the GSA identifies this as a data gap to be addressed during Plan implementation. As the data gaps are filled, staff recommend the GSA update the information presented in Table 6.1 accordingly. Furthermore, to add clarity regarding how the minimum thresholds and measurables objective are set relative to historical groundwater levels and well screens/pump intakes, staff recommend the GSA provide a hydrograph for each representative monitoring well that depicts the established minimum threshold and measurable objectives elevations in relation to historical groundwater elevations and well screen/pump intake elevations.

Staff recommend the GSA revise the measurable objectives such that the measurable objective elevations are not set below the minimum threshold elevations and rectify the issues discussed above (see Recommended Corrective Action 5).

The GSP does not define interim milestones for chronic lowering of groundwater levels, stating that groundwater conditions with respect to groundwater levels are already sustainable and "[t]herefore, no interim milestones are needed to achieve sustainability by 2042."[168] Department staff understand this to mean that the current groundwater levels in the Subbasin are already at the measurable objective levels. The GSP Regulations require GSAs to establish interim milestones for each applicable sustainability indicator, using the same metric as the measurable objective and in increments of five years, to show progress towards achieving the sustainability goal for the Subbasin within 20 years of GSP implementation.[169] Because the GSP states that the groundwater levels "are already sustainable," staff will evaluate groundwater level conditions for the Subbasin relative to the measurable objectives during the five-year Periodic Reviews[170] to evaluate whether Plan implementation continues to maintain the groundwater levels at the measurable objective levels.

Despite the recommended corrective actions identified, Department staff conclude that the Plan's discussion of sustainable management criteria for groundwater levels substantially covers the specific items listed in the GSP Regulations. Staff consider the GSA's objective of maintaining groundwater levels above pump intakes and at or above historical low groundwater levels, to be a reasonable approach that will help avoid a significant and unreasonable depletion of supply in the Subbasin in the long-term.

[168] Elsinore Valley GSP, Section 6.2.7, p. 251.
[169] 23 CCR §§ 354.30 (a), 354.30 (e).
[170] 23 CCR § 355.6 (c)(1).

Addressing the identified recommended corrective actions by the first Periodic Evaluation of the Plan is acceptable at this time because groundwater levels in the Subbasin have generally been stable for the past several years and are not projected to decline in the future; thus, groundwater conditions and other sustainability indicators are not likely to significantly deteriorate while the GSA works to address the recommended corrective actions.

4.3.2.2 Reduction of Groundwater Storage

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the reduction of groundwater storage, the GSP Regulations require the minimum threshold for the reduction of groundwater storage to be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.[171]

The Plan states that undesirable results due to reduction of groundwater storage "would be an insufficient supply to support beneficial uses during droughts."[172] The Plan also states that groundwater storage and groundwater levels in the Subbasin are closely related, and undesirable results associated with reduction of groundwater storage would likely be accompanied by undesirable results associated with groundwater levels (e.g., reduced well yields, subsidence, and depletions of interconnected surface water). The Plan describes the potential causes of undesirable results associated with reduction of groundwater storage and the potential effects on beneficial uses and users in the Subbasin, which are all also related to groundwater levels.[173]

Because groundwater levels and groundwater storage are closely related, the Plan uses groundwater levels as a proxy to establish minimum thresholds and measurable objectives for the reduction of groundwater storage sustainability indicator. [174] The GSA expects that maintaining groundwater levels above the minimum thresholds for chronic lowering of groundwater levels will be sufficiently protective and prevent significant and unreasonable reduction of groundwater storage in the Subbasin.[175] Since groundwater levels are used as a proxy, the minimum thresholds and measurable objectives established for the chronic lowering of groundwater levels sustainability indicator apply to the reduction of groundwater storage sustainability indicator.[176]

Based on the information presented in the Plan, which shows that changes in groundwater levels have generally correlated with changes in groundwater storage,

[171] 23 CCR § 354.28(c)(2).
[172] Elsinore Valley GSP, Section 6.3.1, p. 252.
[173] Elsinore Valley GSP, Sections 6.3.2 and 6.3.4, p. 253.
[174] Elsinore Valley GSP, Section 6.3, pp. 252-257.
[175] Elsinore Valley GSP, Section 6.3.6, p. 255.
[176] Elsinore Valley GSP, Sections 6.3.6 and 6.3.7, pp. 255-257.

Department staff conclude that the GSA's rationale to use groundwater levels as a proxy seems reasonable. Staff also conclude that the discussion and information presented for the reduction in storage substantially complies with the GSP Regulations.

4.3.2.3 Seawater Intrusion

In addition to components identified in 23 CCR §§ 354.28 (a-b), for seawater intrusion, the GSP Regulations require the minimum threshold for seawater intrusion to be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results.[177]

According to the Plan, the Subbasin is located approximately 30 miles inland from the Pacific Ocean and the lowest groundwater elevation in the Subbasin are more than 1,000 feet above msl; thus, the risk of seawater intrusion does not exist in the Subbasin.[178] Consequently, the GSA does not establish sustainable management criteria for the seawater intrusion sustainability indicator.

Given the physical setting of the Subbasin, Department staff consider the GSA's rationale to not establish sustainable management criteria for seawater intrusion to be reasonable and in substantial compliance with the GSP Regulations.

4.3.2.4 Degraded Water Quality

In addition to components identified in 23 CCR §§ 354.28 (a-b), for degraded water quality, the GSP Regulations require the minimum threshold for degraded water quality to be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.[179]

The Plan states that the GSA's objective is "to protect groundwater quality from getting worse but not to reverse existing undesirable water quality conditions as of 2015."[180] The Plan includes descriptions of potential causes of undesirable results associated with degraded water quality, which include naturally occurring processes and human activities (such as agricultural activities, discharge from septic systems, confined animal and wastewater facilities, infiltration of urban runoff, and imported water use).[181] The Plan also includes discussion of the potential effects of undesirable results associated with degraded water quality on beneficial uses and users. The Plan states that elevated concentrations of constituents of concern could have impacts on environmental

[177] 23 CCR § 354.28(c)(3).
[178] Elsinore Valley GSP, Section 4.10, p. 169.
[179] 23 CCR § 354.28(c)(4).
[180] Elsinore Valley GSP, Section 6.5, p. 258.
[181] Elsinore Valley GSP, Section 6.5.1, p. 258.

conditions, deteriorate water quality in streams and water bodies, necessitate treatment of groundwater before use as a potable water source, limit use of groundwater as a potable water supply, increase treatment costs, and adversely affect human health.[182]

However, in its discussion of undesirable results associated with degraded water quality, the Plan does not describe criteria that the GSA will use to determine whether undesirable results associated with degraded water quality are occurring. Department staff recommend the GSA define criteria that will be used to define when and where the effects of degraded water quality cause undesirable results, which should be based on a quantitative description of the combination of minimum thresholds exceedances that cause significant and unreasonable effects in the Subbasin (see Recommended Corrective Action 6).

The Plan leverages existing water quality data available from regulatory monitoring programs operating in the Subbasin, including previous studies conducted in the Subbasin and surrounding areas, to assess degraded water quality and establish minimum thresholds for degraded water quality.[183] Because of regional issues relating to salt and nutrient loading, the Plan establishes minimum thresholds for nitrate and TDS based on the maximum benefit objectives or antidegradation objective established in the Water Quality Control Plan for the Santa Ana River Basin. The minimum thresholds for nitrate are set at 5 milligrams per liter (mg/L) in the Elsinore Management Area and at 7.9 mg/L in the Lee Lake and Warm Springs Management Areas.[184] The minimum thresholds for TDS are set at 530 mg/L in the Elsinore Management Area and at 820 mg/L in the Lee Lake and Warm Springs Management Areas.[185] The GSA plans to evaluate the minimum thresholds against ambient groundwater concentrations that will be calculated by the Santa Ana Watershed Project Authority Basin Monitoring Task Force on a triennial basis. The Santa Ana Watershed Project Authority Basin Monitoring Task Force collects and compiles water quality data obtained by various monitoring programs and public agencies/entities in the Santa Ana region.[186]

The Plan includes discussion of potential effects of the established minimum thresholds for degraded water quality on other applicable sustainability indicators in the Subbasin and on beneficial uses and users of groundwater. The Plan concludes that the minimum thresholds established for degraded water quality are not anticipated to have negative impacts on other applicable sustainability indicators in the Subbasin or on beneficial uses and users of groundwater.[187] Department staff consider this conclusion to be reasonable because the minimum thresholds established for nitrate and TDS are below their

[182] Elsinore Valley GSP, Section 6.5.3, p. 259.
[183] Elsinore Valley GSP, Section 4.4.1 through 4.7.4, pp. 148-155.
[184] Elsinore Valley GSP, Table 6.3, p. 262.
[185] Elsinore Valley GSP, Table 6.4, p. 263.
[186] Elsinore Valley, GSP, Section 6.5.5, p. 261, and Section 6.5.6.8, p. 264.
[187] Elsinore Valley GSP, Section 6.5.6.3 through 6.5.6.5, pp. 263-264.

respective California's Title 22 drinking water standards (i.e., primary or secondary Maximum Contaminant Levels [MCLs]) and are therefore, protective of human health.

The Plan establishes measurable objectives for degraded water quality as follows:

- "The [measurable objective] for [nitrate] is defined as maintaining or reducing the average ambient concentration of nitrate to the [minimum threshold], which is 5 mg/L for the Elsinore [Management Area] and 7.9 mg/L for the Lee Lake and Warm Springs [Management Areas].
- The [measurable objective] for TDS is defined as maintaining or reducing the average ambient concentration of TDS to the [minimum threshold], which is 530 mg/L for the Elsinore [Management Area] and 820 mg/L for the Lee Lake and Warm Springs [Management Areas]."[188]

The Plan states that the measurable objectives "will be evaluated in increments of five years and the numeric values will be presented with comparison to the [c]urrent [c]onditions. This comparison will be discussed in the context of actual progress in implementing measures to improve monitoring and management." [189]

Although the Plan identifies arsenic as a key constituent of concern in the Subbasin, the Plan does not establish sustainable management criteria for it. The Plan states that arsenic is naturally occurring in the Subbasin; the relationships between depth, groundwater levels, and arsenic concentrations are unknown; and available information is insufficient to understand if any management actions such as changing groundwater levels could have an impact on its concentrations in groundwater. The Plan also states that municipal wells with elevated arsenic concentrations are treated at a centralized treatment facility or by blending for wells that have slightly elevated arsenic concentrations. The Plan further states that the Santa Ana Regional Water Quality Control Board (Regional Water Board) currently regulates arsenic within the region and has not yet set regional standards for arsenic. The GSA does not wish to define minimum thresholds and measurable objectives that may end up being in conflict with the Regional Water Board standards. For these reasons, the GSA has not established sustainable management criteria for arsenic. The GSA intends to work closely with the Regional Water Board and the Department to determine how to manage arsenic in the future and proposes to conduct an arsenic leaching study. [190]The Plan states that other constituents "may be added in subsequent GSP updates if future monitoring indicates that management actions may impact water quality in one or more [management areas].[191]

Department staff support the GSA's plan to address data gaps related to improving understanding of the relationship between groundwater levels and arsenic

[188] Elsinore Valley GSP, Section 6.5.7.1, p. 265.
[189] Elsinore Valley GSP, Section 6.5.7.1, p. 265.
[190] Elsinore Valley GSP, Section 6.5.4.2, p. 260; Section 7.4.3, p. 302; and Section 7.7.3, p. 312.
[191] Elsinore Valley GSP, Section 6.5.4, p. 259.

concentrations. However, staff do not consider a lack of this information to be an appropriate reason for not establishing sustainable management criteria for arsenic. Also, while arsenic is treated at municipal supply wells, private and domestic wells owners may not have the capability to treat their wells. Therefore, given that arsenic is present in the Subbasin's groundwater at concentrations above regulatory standards, is identified as a key constituent of concern, and has the potential to further degrade groundwater quality in the Subbasin and impact private and domestic wells, staff recommend the GSA establish sustainable management criteria for arsenic based on existing state/federal regulatory standards. The GSA may update the sustainable management criteria if/when the Regional Water Board establishes region-specific standards (see Recommended Corrective Action 7).

Despite the recommended corrective actions identified above, the Plan's discussion of the established sustainable management criteria for degradation of water quality is comprehensive, presented in an understandable format, and uses the best available information and science. Department staff conclude that the Plan's discussion of sustainable management criteria for degraded water quality substantially covers the specific items listed in the GSP regulations. Addressing the recommended corrective actions by the first Periodic Evaluation is acceptable at this time because currently, arsenic is only identified as an issue in the Lake Elsinore Management Area and groundwater is treated in that area to meet drinking water standards. Additionally, the GSA is not intending to lower groundwater levels in the Subbasin; thus, groundwater conditions and other sustainability indicators such as degraded water quality are not likely to significantly deteriorate while the GSA works to address the recommended corrective actions.

4.3.2.5 Land Subsidence

In addition to components identified in 23 CCR §§ 354.28 (a-b), the GSP Regulations require the minimum threshold for land subsidence to be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.[192] Minimum thresholds for land subsidence shall be supported by identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects and maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum thresholds and measurable objectives.[193]

The Plan states that land subsidence has not been an issue in the Subbasin and undesirable results related to land subsidence have not been reported. However, the GSA recognizes that the potential for subsidence to occur due to groundwater pumping and

[192] 23 CCR § 354.28(c)(5).
[193] 23 CCR §§ 354.28(c)(5)(A-B).

significant groundwater level declines in areas underlain by thick layers of fine-grained alluvial and lacustrine sediments exists in the Subbasin.[194] Therefore, the GSA has established sustainable management criteria for land subsidence for the Subbasin.

The Plan describes undesirable results related to land subsidence as including the following:

- "Potential damage to building structures and foundations, including water facilities, due to variations in vertical displacement causing potential cracking, compromised structural integrity, safety concerns and even collapse.
- Potential differential subsidence affecting the gradient of surface drainage channels, locally reducing the capacity to convey floodwater and causing potential drainage problems and ponding.
- Potential differential subsidence affecting the grade or drainage of other infrastructure such as railroads, roads, and sewers.
- Potential subsidence around a production well, disrupting wellhead facilities or resulting in casing failure.
- Potential non-recoverable loss of groundwater storage as fine-grained layers collapse."[195]

The Plan describes in general terms, potential causes of undesirable results associated with land subsidence due to groundwater extraction as including, declining groundwater levels that cause dewatering and compaction of predominantly fine-grained sediments (clay and silt).[196] Regarding potential effects of undesirable results associated with land subsidence on beneficial uses and users in the Subbasin, the Plan states that land subsidence can contribute to drainage or flood related problems in the Subbasin.[197]

The Plan defines the minimum threshold for land subsidence as "an average rate of decline of 0.1 [feet] in any five-year period, equal to a 1-[foot] decline over 50 years" [198] and adds that the minimum threshold "is not triggered unless there is a change of greater than 6 inches since 2015, the base year for the GSP."[199] The Plan justifies the 1-foot criterion for the allowable cumulative subsidence by stating that it is based on city and county standards for flooding and drainage, and on empirical data for well casing collapse observed in the southwestern portion of Sacramento Valley.[200]

In its discussion of undesirable results associated with land subsidence, the Plan does not describe criteria that the GSA will use to determine whether undesirable results

[194] Elsinore Valley GSP, Section 6.6, pp. 265-266.
[195] Elsinore Valley GSP, Section 6.6.1, p. 266.
[196] Elsinore Valley GSP, Section 6.6.2, p. 267.
[197] Elsinore Valley GSP, Section 6.6.3, p. 267.
[198] Elsinore Valley GSP, Section 6.6.4, p. 267.
[199] Elsinore Valley GSP, Section 6.6.4, p. 267.
[200] Elsinore Valley GSP, Section 6.6.4, p. 268.

associated with land subsidence are occurring. Additionally, it is not clear to Department staff whether the trigger language included in the minimum threshold definition is intended to be the criteria for determining whether undesirable results related to land subsidence are occurring. Staff recommend the Plan clarify the criteria that will be used to define when and where the effects of land subsidence cause undesirable results, which should be based on a quantitative description of the combination of minimum thresholds exceedances that cause significant and unreasonable effects in the Subbasin (see Recommended Corrective Action 8).

The Plan includes discussion of the relationship between the land subsidence minimum threshold and other applicable sustainability indicators in the Subbasin and potential effects on beneficial uses and users. Because minimum thresholds for chronic lowering of groundwater levels are not set below the historical lows, the GSA does not anticipate significant and unreasonable land subsidence due to groundwater extraction to occur in the Subbasin nor does the GSA anticipate the minimum threshold established for land subsidence to negatively affect other applicable sustainability indicators or beneficial uses and users in the Subbasin.[201]

The Plan defines the measurable objective for land subsidence as "zero subsidence."[202] The Plan does not establish interim milestones stating that "[u]ndesirable subsidence results have not occurred, and accordingly, no interim milestones are defined." [203] The GSA plans to evaluate the rate and extent of subsidence across the Subbasin using the Department's InSAR satellite-based subsidence data.[204]

Department staff conclude that the Plan's discussion of land subsidence includes adequate support, justification, and information to understand the GSAs' process, analysis, and rationale. While staff have recommended the GSA to clarify the quantitative definition of undesirable results for land subsidence, this does not preclude the Plan for approval at this time, given that the Subbasin does not appear to have significant current or historical land subsidence, and the GSA does not propose to lower groundwater level below historical low levels. Department staff are aware of no significant inconsistencies or contrary information to that presented in the GSP and, therefore, have no significant concerns regarding the discussion of this subject in the Plan.

4.3.2.6 Depletions of Interconnected Surface Water

SGMA defines undesirable results for the depletion of interconnected surface water as those that have significant and unreasonable adverse impacts on beneficial uses of surface water and are caused by groundwater conditions occurring throughout the basin.[205] The GSP Regulations require that a Plan identify the presence of interconnected

[201] Elsinore Valley GSP, Section 6.6.4.1 through 6.6.4.3, pp. 268-269.
[202] Elsinore Valley GSP, Section 6.6.5, p. 269.
[203] Elsinore Valley GSP, Section 6.6.5, p. 269.
[204] Elsinore Valley GSP, Section 6.6.4.6, p. 269.
[205] Water Code § 10721(x)(6).

surface water systems in the basin and estimate the quantity and timing of depletions of those systems.[206] The GSP Regulations further require that minimum thresholds be set based on the rate or volume of surface water depletions caused by groundwater use, supported by information including the location, quantity, and timing of depletions, that adversely impact beneficial uses of the surface water and may lead to undesirable results.[207]

The Plan acknowledges the presence of interconnected surface waters in the Subbasin and identifies their location by evaluating stream flow measurement data, depth to groundwater data, and riparian vegetation data. [208] Department staff are satisfied that the GSA has adopted a reasonable approach to identify the location of interconnected surface waters in the Subbasin.

The Plan does not provide a quantification of interconnected surface water depletions in the Subbasin nor quantify the rate or volume of surface water depletions due to groundwater pumping as the sustainable management criteria as required by the GSP Regulations. [209] Instead, the Plan proposes to use shallow groundwater levels near locations identified as supporting phreatophytic riparian vegetation to evaluate depletions of interconnected surface water. The Plan states that it would be difficult to define minimum thresholds for depletions of interconnected surface water in terms of flow rate in the Subbasin. Because phreatophytic riparian vegetation appear to be mostly correlated with areas where depth to groundwater is consistently shallow, the distribution and condition of riparian vegetation seems to correlate directly with groundwater levels.[210] The GSAs have not provided a technical justification for the use of groundwater elevations as a proxy for quantifying the location, quantity, and timing of depletions of interconnected surface water due to groundwater extraction. As a result, the GSAs have not demonstrated by adequate evidence that groundwater elevation can serve as a sustainability indicator for the depletions of interconnected surface water.

The GSP describes undesirable results for depletions of interconnected surface water as including reduced quality and quantity of aquatic and riparian habitats, and reduced water supply to downstream users.[211] The Plan includes a detailed assessment of potential beneficial uses and users of interconnected surface water and surface water in the Subbasin and also includes discussion of potential effects of undesirable results associated with depletions of interconnected surface water on the beneficial uses and users.[212]

[206] 23 CCR § 354.16 (f).
[207] 23 CCR § 354.28 (c)(6).
[208] Elsinore Valley GSP, Section 4.11, pp. 170-184, and Figure 4.17, p. 171.
[209] 23 CCR § 354.28 (c)(6).
[210] Elsinore Valley GSP, Sections 6.7.4 and 6.7.5, p. 284.
[211] Elsinore Valley GSP, Section 6.7.1, p. 270.
[212] Elsinore Valley GSP, Section 6.7.2.1 through 6.7.2.5, pp. 270-283.

The Plan qualitatively defines undesirable results due to depletions of interconnected surface water as "[r]iparian vegetation die-back or mortality during droughts of a magnitude that disrupts ecological functions or causes substantial reductions in populations of riparian-associated species."[213]

Quantitatively, the Plan defines undesirable results for depletions of interconnected surface water as occurring "when water levels along more than half of the reach of Temescal Wash within the Subbasin exceed the [minimum threshold]."[214] Department staff have concerns with limiting the definition of undesirable results for depletions of interconnected surface water specifically to the Temescal Wash, given that the Plan identifies the Horsethief Canyon Creek as also having interconnected surface water. Additionally, if other areas other than the Temescal Wash are identified as having interconnected surface water during data gap filling investigations in the future, the current definition would not be applicable to those other areas. Therefore, Department staff recommend the GSA revise the quantitative definition of undesirable results for depletions of interconnected surface water such that the definition can be applied to all locations in the Subbasin where interconnected surface water is present (see Recommended Corrective Action 9a)

The Plan establishes the minimum threshold for depletions of interconnected surface as "the amount of depletion that occurs when the depth to water in areas supporting phreatophytic riparian vegetation of greater than 35 [feet] for a period exceeding one year."[215] The Plan points out that depth of the root zone in the Subbasin is unclear and that the GSA intends to conduct a study on GDEs in the Temescal Wash, to address GDE and interconnected surface water related data gaps.[216] The Plan states that the established minimum thresholds are initial values that are intended to be protective of GDEs until the monitoring program can be refined to better represent near-stream shallow conditions.[217]

The Plan states that the measurable objectives for depletions of interconnected surface water "is an amount of depletion that is less than the amount specified as the [minimum threshold]."[218] The Plan does not establish interim milestones, stating that "[g]roundwater conditions with respect to interconnected surface water and most GDE parameters are already sustainable. Therefore, no interim milestones are needed to achieve sustainability at this time."[219]

Department staff understand that quantifying depletions of surface water from groundwater extractions is a complex task that likely requires developing new, specialized

[213] Elsinore Valley GSP, Section 6.7.3, p. 284.
[214] Elsinore Valley GSP, Section 6.7.6, p. 285.
[215] Elsinore Valley GSP, Section 6.7.6, p. 285.
[216] Elsinore Valley GSP, Section 7.7.3, p. 312.
[217] Elsinore Valley GSP, Section 6.7.6, p. 284.
[218] Elsinore Valley GSP, Section 6.7.7, p, 287.
[219] Elsinore Valley GSP, Section 6.7.7, p, 287.

tools, models, and methods to understand local hydrogeologic conditions, interactions, and responses. During the initial review of GSPs, Department staff have observed that most GSAs have struggled with this new requirement of SGMA. However, staff believe that most GSAs will more fully comply with regulatory requirements after several years of Plan implementation that includes projects and management actions to address the data gaps and other issues necessary to understand, quantify, and manage depletions of interconnected surface waters. Accordingly, Department staff believe that affording GSAs adequate time to refine their Plans to address interconnected surface waters is appropriate and remains consistent with SGMA's timelines and local control preferences.

The Department will continue to support GSAs in this regard by providing, as appropriate, financial and technical assistance to GSAs, including the development of guidance describing appropriate methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water caused by groundwater extractions. Once the Department's guidance related to depletions of interconnected surface water is publicly available, the GSA, where applicable, should consider incorporating appropriate guidance approaches into their future periodic updates to the GSP (see Recommended Corrective Action 9b). GSAs should consider availing themselves of the Department's financial or technical assistance, but in any event must continue to fill data gaps, collect additional monitoring data, and implement strategies to better understand and manage depletions of interconnected surface water caused by groundwater extractions and define segments of interconnectivity and timing within their jurisdictional area (see Recommended Corrective Action 9c). Furthermore, GSAs should coordinate with local, state, and federal resources agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion (see Recommended Corrective Action 9d).

4.4 Monitoring Network

The GSP Regulations describe the monitoring network that must be developed for each sustainability indicator including monitoring objectives, monitoring protocols, and data reporting requirements. Collecting monitoring data of sufficient quality and quantity is necessary for the successful implementation of a groundwater sustainability plan. The GSP Regulations require a monitoring network of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.[220] Specifically, a monitoring network must be able to monitor impacts to beneficial uses and users,[221] monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds,[222] capture seasonal low and high conditions,[223] include

[220] 23 CCR § 354.32.
[221] 23 CCR § 354.34(b)(2).
[222] 23 CCR § 354.34(b)(3).
[223] 23 CCR § 354.34(c)(1)(B).

required information such as location and well construction and include maps and tables clearly showing the monitoring site type, location, and frequency.[224] Department staff encourage GSAs to collect monitoring data as specified in the GSP, follow SGMA data and reporting standards,[225] fill data gaps identified in the GSP prior to the first periodic evaluation,[226] update monitoring network information as needed, follow monitoring best management practices,[227] and submit all monitoring data to the Department's Monitoring Network Module immediately after collection including any additional groundwater monitoring data that is collected within the Plan area that is used for groundwater management decisions. Department staff note that if GSAs do not fill their identified data gaps, the GSA's basin understanding may not represent the best available science for use to monitor basin conditions.

The Plan describes monitoring networks for the five sustainability indicators relevant to the Subbasin: chronic lowering of groundwater levels, reduction of groundwater storage, degraded water quality, land subsidence, and depletions of interconnected surface water. The Plan relies on existing monitoring networks and programs operating in the Subbasin that monitor groundwater levels, water quality, surface water flow, weather and precipitation, and land subsidence to establish representative monitoring wells for the SGMA monitoring network.[228]

As stated in the Plan, the objective of the Subbasin's monitoring network is to track and monitor sustainability indicators in relation to measurable objectives and minimum thresholds. The monitoring network will allow collection of sufficient data to demonstrate seasonal, short-term, and long-term trends in groundwater and related surface water conditions.[229]

The monitoring network for the chronic lowering of groundwater levels sustainability indicator is a subset of existing wells and consists of 27 representative monitoring wells of which, 16 are within the Lake Elsinore Management Area, nine within the Lee Lake Management Area, and two within the Warm Springs Management Area.[230] Two of the wells (one in the Lee Lake Management Area and one in the Warm Springs Management Area) were installed in 2021 to improve spatial coverage of the Subbasin. The GSA recognizes that although the number of representative monitoring wells selected for monitoring groundwater levels meets the range of density of monitoring wells recommended by the Department's Best Management Practices,[231] improvements and refinement of the monitoring network are needed such as increasing spatial coverage to improve understanding of the hydrogeology of the Subbasin; installing new wells solely

[224] 23 CCR §§ 354.34(g-h).
[225] 23 CCR § 352.4 *et seq*.
[226] 23 CCR § 354.38(d).
[227] Department of Water Resources, 2016, Best Management Practices and Guidance Documents.
[228] Elsinore Valley GSP, Section 7.1.1, pp. 289-290.Table MN-2, p. 320, and Figure MN-1, p. 342.
[229] Elsinore Valley GSP, Section 7.2.1 through 7.2.2, p. 294.
[230] Elsinore Valley GSP, Section 7.4.1, pp. 296-301.
[231] Department of Water Resources, 2016, Monitoring Networks and Identification of Data Gaps BMP.

dedicated for monitoring groundwater levels (currently, several of the representative monitoring wells are also used as production wells); installing shallow groundwater monitoring wells; addressing well construction data gaps; employing automated monitoring methods/technologies; and optimizing the data management system through collection of data on a consistent basis.[232] The GSA intends to continue improving the monitoring network during Plan implementation and/or when funding is available.

The GSA plans to collect groundwater level measurements bi-annually, during the spring (between April 1 and May 30) and fall (between October 1 and November 30), to represent seasonal high and seasonal low groundwater conditions. [233]

The GSA uses groundwater levels as a proxy for reduction of groundwater storage. Therefore, the GSA plans to use the monitoring network established for the chronic lowering of groundwater levels sustainability indicator to monitor and evaluate reduction of groundwater storage. The Plan states that annual groundwater storage changes will be estimated by evaluating the volumetric difference between changes in groundwater surfaces based on spring groundwater level data.[234]

The monitoring network for degraded water quality consists of 26 wells (16 located in the Lake Elsinore Management Area, eight in the Lee Lake Management Area, and two in the Warm Springs Management Area); the wells will be complemented by data from wells used for various existing and ongoing regulatory monitoring programs operating in the Subbasin. [235] The GSA intends to sample municipal production wells monthly and other wells annually on a routine and consistent basis for general minerals, physical parameters, and selected COCs. The GSA intends to plot trends to show how concentrations for constituents of concern may be changing over time during the Plan implementation period. The time series plots will be provided to the Department in Annual Reports. The Plan identifies a lack of well information for some wells in the monitoring network as a data gap that the GSA intends to address during Plan implementation.[236]

The GSA plans to utilize the Department's InSAR remote sensing dataset to monitor and evaluate land subsidence in the Subbasin.[237] Department staff note that the InSAR dataset provides good spatial coverage for the Subbasin and is likely the best available tool for monitoring land subsidence in the Subbasin.

The monitoring network for evaluating depletions of interconnected surface water due to groundwater use currently consists of nine wells (a subset of representative monitoring wells established for monitoring groundwater levels) located near stream reaches and

[232] Elsinore Valley GSP, Section 7.7.1, pp. 310-312.
[233] Elsinore Valley GSP, Section 7.5.1, p. 305.
[234] Elsinore Valley GSP, Section 7.4.2, pp. 301-302.
[235] Elsinore Valley GSP, Table 7.8, p. 303.
[236] Elsinore Valley GSP, Section 7.4.3, pp. 302-303.
[237] Elsinore Valley GSP, Section 7.4.4, p. 304.

where GDEs have been identified.[238] The Plan points out that these wells are mostly production wells with relatively deep well screens and are useful for relating future conditions to historical conditions, but do not provide reliable indication of the true water table elevation near the ground surface. The Plan identifies this as a data gap[239] that the GSAs will address during Plan implementation.[240] The frequency of monitoring is the same as that established for groundwater levels (i.e., during spring between April 1 and May 30 and during fall between October 1 and November 30).

Department staff conclude that the description of the monitoring network included in the Plan substantially complies with the requirements outlined in the GSP Regulations. Overall, the Plan describes in sufficient detail a monitoring network that promotes the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the Subbasin and evaluate changing conditions that occur through Plan implementation. The monitoring network appears to be supported by the best available information and data and is designed to ensure adequate coverage of sustainability indicators. The Plan also describes existing data gaps and the steps that will be taken to fill the data gaps and improve the monitoring network. Department staff will evaluate the GSA's progress of filling data gaps through review of Annual Reports and Periodic Evaluations of the Plan.

4.5 PROJECTS AND MANAGEMENT ACTIONS

The GSP Regulations require a description of the projects and management actions the submitting Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.[241] Each Plan's description of projects and management actions must include details such as: how projects and management actions in the GSP will achieve sustainability, the implementation process and expected benefits, and prioritization and criteria used to initiate projects and management actions.[242]

The Plan states that the Subbasin is not characterized by overdraft or extensive declining groundwater trends and is not experiencing undesirable results associated with any of the applicable sustainability indicators.[243] To achieve the sustainability goal for the Subbasin and respond to changing conditions, the Plan describes eight projects and two management actions that generally benefit the Subbasin through conjunctive water management (in-lieu recharge), direct recharge from recycled water, increased operational flexibility and reliability, improved groundwater quality, and data gap filling.

[238] Elsinore Valley GSP, Section 7.4.5, pp, 304-305, and Figure 7.1, p. 299.
[239] Elsinore Valley GSP, Section 7.4.5, p, 305.
[240] Elsinore Valley GSP, Section 7.7.1.4, p. 311; Section 8.3.5.1, p. 341; and Figure 8.8, p. 343.
[241] 23 CCR § 354.44 (a).
[242] 23 CCR § 354.44 (b) *et seq*.
[243] Elsinore Valley GSP, ES.4, p. 26 and Section 6.1.2, p. 237.

The Plan categorizes the projects and management actions into three groups. Group 1 consists of one project and one management action, which are identified as baseline, and considered to be existing or to have established commitments from the Elsinore Valley Municipal Water District to be implemented. Group 2 consists of four projects and one management action and are described as being fully developed, thoroughly evaluated by the Elsinore Valley Municipal Water District, and having a concrete implementation schedule. Group 3 consists of three projects, which are considered as conceptual, with the potential to be considered for implementation in the future if any Group 2 projects fail to be implemented or additional intervention is required to achieve the Subbasin's sustainability goal.[244] The Plan includes in tabular format, information regarding the implementing agency, status, and anticipated timeframe for each project and management action.[245]

The Group 1 project and management action include the following:

- Groundwater Well Replacements: this project involves maintaining, retrofitting, and replacing existing wells on an ongoing and as-needed basis. The project does not have a quantifiable groundwater benefit.[246]
- Manage Groundwater Pumping in Elsinore Management Area with In-Lieu Recharge due to Conjunctive Use Agreements: this management action is already implemented and has been ongoing for several years. The conjunctive use program is expected to be expanded by 4,500 acre-feet, or an additional extraction capability of 1,500 acre-feet. The program is intended to store 4,500 acre-feet in the Subbasin in wet years and extract as needed during drought conditions.[247]

The Group 2 projects and management action, which will be implemented to achieve the sustainability goal (in conjunction with the Group 1 project and management action), include the following:

- Begin Groundwater Pumping in Lee Lake Management Area for Municipal Use: this project entails installing two extraction wells in the Lee Lake Management Area for municipal use. Wells in the Lee Lake Management Area have previously been used for agricultural purposes and never for potable water supply. By pumping in the Lee Lake for municipal supply, the GSA expects to offset pumping in other areas of the Subbasin where fluctuations in groundwater levels are observed, thereby, promoting stable groundwater levels in the Subbasin.[248]

[244] Elsinore Valley GSP, Section 8.1, p. 313.
[245] Elsinore Valley GSP, Table 8.1, pp. 313-314.
[246] Elsinore Valley GSP, Section 8.2.1, p. 314.
[247] Elsinore Valley GSP, Section 8.2.2, pp. 314-315.
[248] Elsinore Valley GSP, Section 8.3.1, pp. 316-321, and Figure 8.2, p. 319.

- Rotate Pumping Locations and Flows: this management action involves rotating pumping locations in the Elsinore Management Area to help keep groundwater levels stable throughout the Subbasin. [249]

- Recycled Water Indirect Potable Reuse: this project entails expanding and upgrading the existing regional water reclamation facility and advanced water treatment facility, and installing five injection wells for delivering recycled water into the ground. The project has the benefit of adding approximately 6,750 acre-feet per year of recycled water to the Subbasin's groundwater, thereby increasing groundwater storage and levels, reducing groundwater salinity, improving drought tolerance, reducing dependency on imported water, and diversifying the Subbasin's supply portfolio.[250]

- Septic Tank Conversions: this project involves phasing out septic systems and connecting to the sewer system, with the benefit of reducing nitrate discharges to groundwater, thus improving groundwater quality in the Subbasin. [251]

- Shallow Monitoring Well Installation: this project involves installing up to six shallow monitoring wells in areas identified as having interconnected surface water as a data gap filling effort.[252]

The Group 3 projects (which are conceptual at this time) include the following:

- Stormwater Capture and Recharge,[253]

- Imported Water Recharge and Recovery,[254]and

- Begin Groundwater Pumping in Warm Springs Management Area for Municipal Use.[255]

Consistent with GSP Regulations and where applicable, the project and management action descriptions contain information regarding a description of the measurable objective that is expected to benefit from the project, an implementation trigger, a summary of the permitting and regulatory process required, expected benefits, and legal authority under which each project will be implemented. The Plan does not provide this information for the contingent projects (Group 3 projects) because they are still in conceptual phase. As additional information becomes available for these projects, Department staff recommend the GSA include in the Plan, expected benefits, estimated

[249] Elsinore Valley GSP, Section 8.3.2, pp. 322-325, and Figure 8.3, p. 323.
[250] Elsinore Valley GSP, Section 8.3.3, pp. 325-336, and Figures 8.4 through 8.6, pp. 329.-334.
[251] Elsinore Valley GSP, Section 8.3.4, pp. 336-339, and Figure 8.7, p. 339.
[252] Elsinore Valley GSP, Section 8.3.5, pp. 341-342, and Figure 8.8, p. 343.
[253] Elsinore Valley GSP, Section 8.4.1, p. 342.
[254] Elsinore Valley GSP, Section 8.4.2, pp. 342-345.
[255] Elsinore Valley GSP, Section 8.4.3, p. 345.

costs, required permits (if applicable), public noticing, the entity managing the project, and clearly defined triggers for implementing the projects.

Department staff conclude that the Plan generally describes the projects and management actions in a manner that is consistent and substantially complies with the GSP Regulations. The projects and management actions (i.e., Group 1 and 2 projects and management actions) which focus largely on increasing direct and indirect recharge, improving groundwater quality, and providing operational flexibility are directly related to the sustainable management criteria and appear to present a generally feasible approach to promote and maintain groundwater sustainability for the Subbasin. Department staff will monitor the progress and performance of the projects and management actions through review of Annual Reports and Periodic Evaluations. Failure to implement the projects and management actions, or modifications to those proposed or implemented projects and management actions, may affect the Department's conclusions regarding the adequacy of the Plan or its implementation in future evaluations.

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."[256] Furthermore, the GSP Regulations state that minimum thresholds defined in each GSP be designed to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.[257]

The Elsinore Valley Subbasin has two adjacent basins/subbasins: Temecula Valley Basin and Bedford-Coldwater Subbasin. Both the Temecula Valley Basin and Bedford-Coldwater Subbasin are designated as very low-priority and are not currently required by SGMA to be managed under a GSP. The Plan includes an analysis of potential impacts to the adjacent basin and subbasin with the defined minimum thresholds for each sustainability indicator. The Plan does not anticipate any negative impacts to the adjacent basin and subbasin resulting from the minimum thresholds defined in the Plan.

Department staff will continue to review Periodic Evaluations of the Plan to assess whether implementation of the Elsinore Valley Subbasin GSP is potentially impacting the adjacent basin and subbasin.

4.7 Consideration of Climate Change and Future Conditions

The GSP Regulations require a GSA to consider future conditions and project how future water use may change due to multiple factors including climate change.[258]

[256] Water Code § 10733(c).
[257] 23 CCR § 354.28(b)(3).
[258] 23 CCR § 354.18.

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

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

5 STAFF RECOMMENDATION

Department staff recommend approval of the GSP with the recommended corrective actions listed below. The Elsinore Valley Subbasin 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 Elsinore Valley Subbasin. The GSA has identified several areas for improvement of its Plan and Department staff concur that those items are important and should be addressed as soon as possible. Department staff have also identified additional recommended corrective actions that should be considered by the GSA for the first periodic 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
Identify and describe measures that will be taken to address data gaps in the hydrogeological conceptual model to reduce uncertainty.

RECOMMENDED CORRECTIVE ACTION 2
Conduct investigations to assess the connectivity of perched groundwater to the deeper aquifer in the Lake Elsinore Management Area.

RECOMMENDED CORRECTIVE ACTION 3
Revise the sustainable management criteria to be based on seasonal low groundwater levels to ensure potential impacts to beneficial uses and users are considered. Additionally, the GSA should explain how undesirable results will not occur until 75% of representative monitoring wells exceed minimum thresholds. The GSA should also update the undesirable results criteria, as necessary, to reconcile with the planned trigger response timeline.

RECOMMENDED CORRECTIVE ACTION 4
Assess potential impacts of the established minimum thresholds for chronic lowering of groundwater levels on private and domestic wells and identify the degree/extent of the potential impacts, including the percentage, number, and location of potentially impacted wells at the proposed minimum thresholds for chronic lowering of groundwater levels.

RECOMMENDED CORRECTIVE ACTION 5
Revise the measurable objectives, such that the measurable objective elevations are not set below the minimum threshold elevations and rectify the issues discussed in Section 4.3.2.1.

RECOMMENDED CORRECTIVE ACTION 6
Define criteria that will be used to determine whether undesirable results related to degraded water quality are occurring, based on a quantitative description of the combination of minimum thresholds exceedances that cause significant and unreasonable effects in the Subbasin.

RECOMMENDED CORRECTIVE ACTION 7
Establish sustainable management criteria for arsenic based on the current applicable regulatory standards.

RECOMMENDED CORRECTIVE ACTION 8
Clarify criteria that will be used to determine whether undesirable results associated with land subsidence are occurring, based on a quantitative description of the combination of

minimum thresholds exceedances that cause significant and unreasonable effects in the Subbasin.

RECOMMENDED CORRECTIVE ACTION 9

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

In addition, the GSA should work to address the following items by the first periodic update:

a. Revise the definition for undesirable results for depletions of interconnected surface water to remove the limitation to Temescal Wash and so that the definition applies to any other surface water body identified as having interconnected surface water.

b. Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.

c. Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.

d. Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSA's jurisdictional area.