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

Bryan Bondy
Mound Basin Groundwater Sustainability Agency
PO Box 3544
Ventura, CA 93006
bryan@bondygroundwater.com

RE: Santa Clara River Valley – Mound Subbasin - 2022 Groundwater Sustainability Plan

Dear Bryan Bondy,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the Santa Clara River Valley – Mound 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 Mound 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 Mound Subbasin GSP no later than December 31, 2026.

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 Santa Clara River Valley – Mound Subbasin Groundwater Sustainability Plan

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF FINDINGS REGARDING THE APPROVAL OF THE SANTA CLARA RIVER VALLEY – MOUND 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 Mound Basin Groundwater Sustainability Agency (GSA or Agency) for the Mound Subbasin (Basin No. 4-004.03).

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 Mound 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 Mound 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 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) the Department maintains continuing oversight and jurisdiction to ensure the Plan is adequately implemented; (2) the Legislature intended SGMA to be implemented over many years; (3) SGMA provides Plans 20 years of implementation to achieve the sustainability goal in a Subbasin (with the possibility that the Department may grant GSAs an additional five years upon request if the GSA has made satisfactory progress toward sustainability); and, (4) local agencies acting as GSAs are authorized, but not required, to address undesirable results that occurred prior to enactment of SGMA. (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 above historical lows and operate the Subbasin within its sustainable yield are sufficiently justified and explained. While Department staff have identified multiple recommended corrective actions to improve the sustainable management criteria, conditions are generally stable enough to warrant plan approval. 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 will use projects and magement actions to fill identified data gaps and improve monitoring. Most of these are scheduled to be updated by the first periodic plan evaluation due in 2026. (23 CCR § 355.4(b)(2).)

3. The projects and management actions proposed are designed to improve monitoring for groundwater quality issues, including seawater intrusion and contaminant migration due to improper well construction, and fill data gaps related to shallow groundwater in the Subbasin and its interconnection with the Santa Clara River and principal aquifers. 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 and how those interests, including agricultural, municipal, and environmental uses and users, would be impacted by the chosen minimum thresholds. (23 CCR § 355.4(b)(4).)

5. The Plan's projects and management actions appear feasible at this time and appear capable of preventing undesirable results and ensuringthat the Subbasin is managed 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 to implement its GSP or impede achievement of sustainability goals in an adjacent basin. The Plan states minimum thresholds for groundwater levels is protective of both the Mound Basin and the adjacent Oxnard Basin. (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 3 member agencies, the City of San Buenaventura, the County of Ventura, and United Water Conservation District have historically managed water supply, land use, and groundwater replenishment through protecting Santa Clara River runoff by constructing, maintaining, and operating facilities along the river. The GSA's member agencies and their 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 Department developed its GSP Regulations consistent with and intending to further the State's human right to water policy through implementation of SGMA and the Regulations, primarily by achieving sustainable groundwater management in a basin. By ensuring substantial compliance with the GSP Regulations, the Department has considered the state policy regarding the human right to water in its evaluation of the Plan. (Water Code § 106.3; 23 CCR § 350.4(g).)

2. The Plan acknowledges interconnected surface waters within the Subbasin. The GSA contends that sustainable management criteria to manage this sustainability indicator is not applicable in the Subbasin. However, Department staff find that interconnected surface water does physically exist in the Subbasin and the GSA should define significant and unreasonable conditions constituting undesirable results for depletions of interconnected surface water. 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 basin 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 GSA and the Department. Projections of future subbasin extractions appear likely to stay within current and historic ranges, at least until the next periodic evaluation by the GSA and the Department. Subbasin groundwater levels and other SGMA sustainability indicators appear unlikely to substantially deteriorate while the GSA implements the Department's recommended corrective actions.

4. The California Environmental Quality 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 Mound 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 December 31, 2026, as required by Water Code § 10733.8. Failure to address the Department's recommended corrective actions before future, subsequent plan evaluations, may lead to a Plan being determined incomplete or inadequate.

Signed:

Karla Nemeth

Karla Nemeth, Director
Date: October 26, 2023

Exhibit A: Groundwater Sustainability Plan Assessment Staff Report – Santa Clara River Valley – Mound Subbasin

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

Groundwater Basin Name:	Santa Clara River Valley – Mound Subbasin (No. 4-004.03)
Submitting Agency:	Mound Basin Groundwater Sustainability Agency
Submittal Type:	Initial GSP Submission
Submittal Date:	December 31, 2021
Recommendation:	Approved
Date:	October 26, 2023

The Mound Basin Groundwater Sustainability Agency (GSA or Agency) submitted the Mound Basin Groundwater Sustainability Plan (GSP or Plan) for the Santa Clara River Valley – Mound 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 Mound Basin GSP. The GSA has identified areas for improvement of its Plan (e.g., investigating the hydraulic connectivity of the Santa Clara River and principal aquifers, clarifying the reliability of surface water supply in the projected water budget, clarifying definitions of undesirable results, and defining undesirable results for depletions of interconnected surface water). 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) further investigating the hydraulic connectivity between the Santa Clara River, the shallow alluvial deposits, and principal aquifers.
(2) clarifying the reliability of future surface water supplies and potential to affect groundwater use.
(3) addressing the quantitative definition of undesirable results for water quality to account for local or regional threshold exceedances.
(4) addressing the quantitative definition of undesirable results for water levels to account for local threshold exceedances in the Coastal Area.
(5) defining the significant and unreasonable conditions for depletions of interconnected surface water, 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 Mound 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 December 31, 2021.

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 January 14, 2023.[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 Mound 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 exclusive GSA for the Mound Subbasin is the Mound Basin Groundwater Sustainability Agency (Mound GSA), which was formed in 2017 through a joint exercise of powers agreement (JPA) between the City of San Buenaventura (Ventura), the County

[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/19.
[33] Water Code § 10727(b); 23 CCR § 355.4(a)(3).
[34] Mound GSP, Section 2.2, p. 43.
[35] 23 CCR § 354.6 *et seq*.
[36] 23 CCR § 354.8 *et seq*.
[37] 23 CCR § 354.6(e).

of Ventura, and the United Water Conservation District (United), whose jurisdictions collectively cover the entire Mound Subbasin.[38] The Mound GSA is governed by a five-member board, an executive director, and "…contracts with member agency United for financial and administrative support."[39] The Mound GSA plans to use a combination of groundwater extraction fees and federal and state grants to fund GSP implementation costs. Department staff encourage the GSP to include details about planned or current groundwater extraction fees and how those amounts are determined. The GSP indicates that a stakeholder engagement plan was implemented during GSP development to "…seek, encourage, and consider as much public input on the GSP as possible…"[40]

The Mound Subbasin is approximately 24 square miles and has a population of about 100,000, primarily in the City of Ventura. The City of Ventura makes up about 58% of the Subbasin area, with agricultural land use on the outskirts of the City making up 14% and open space, primarily in the northern hills, making up 13%.[41] The remaining 15% appear to consist of a small portion of the City of Oxnard and some parks and low density residential land outside of city limits.[42] Agricultural, open space, or rural land uses are unlikely to change significantly in the future due to an approved voter initiative (Save Open Space and Agricultural Resources [SOAR]) that limits rezoning. All the wells in the Subbasin are located in the southern half, and the GSP contends that there are no individual domestic supply wells in the Subbasin.[43] Department records indicate domestic have been drilled in the Subbasin[44] and staff encourage the GSP to further clarify how it was determined that no domestic supply wells nor de minimis users are present. The GSP identifies the following beneficial uses: Agricultural, Environmental, and Municipal which includes the City of Ventura who has both household and industrial customers but does not include a map or maps that clearly delineate water use sector and water source type. The GSP provides a location map showing the Mound Subbasin, adjacent Subbasins, and land uses (Figure 1).

[38] Mound GSP, Section 2.1, p. 40.
[39] Mound GSP, Section 2.1.2, p. 41.
[40] Mound GSP, Section 2.3, p. 60.
[41] Mound GSP, Section 2.2.3, p. 49.
[42] Mound GSP, Figure 2.1-03, p. 250.
[43] Mound GSP, Section 2.3.1, pp. 60-61.
[44] DWR Online System for Well Completion Reports, https://data.ca.gov/dataset/well-completion-reports

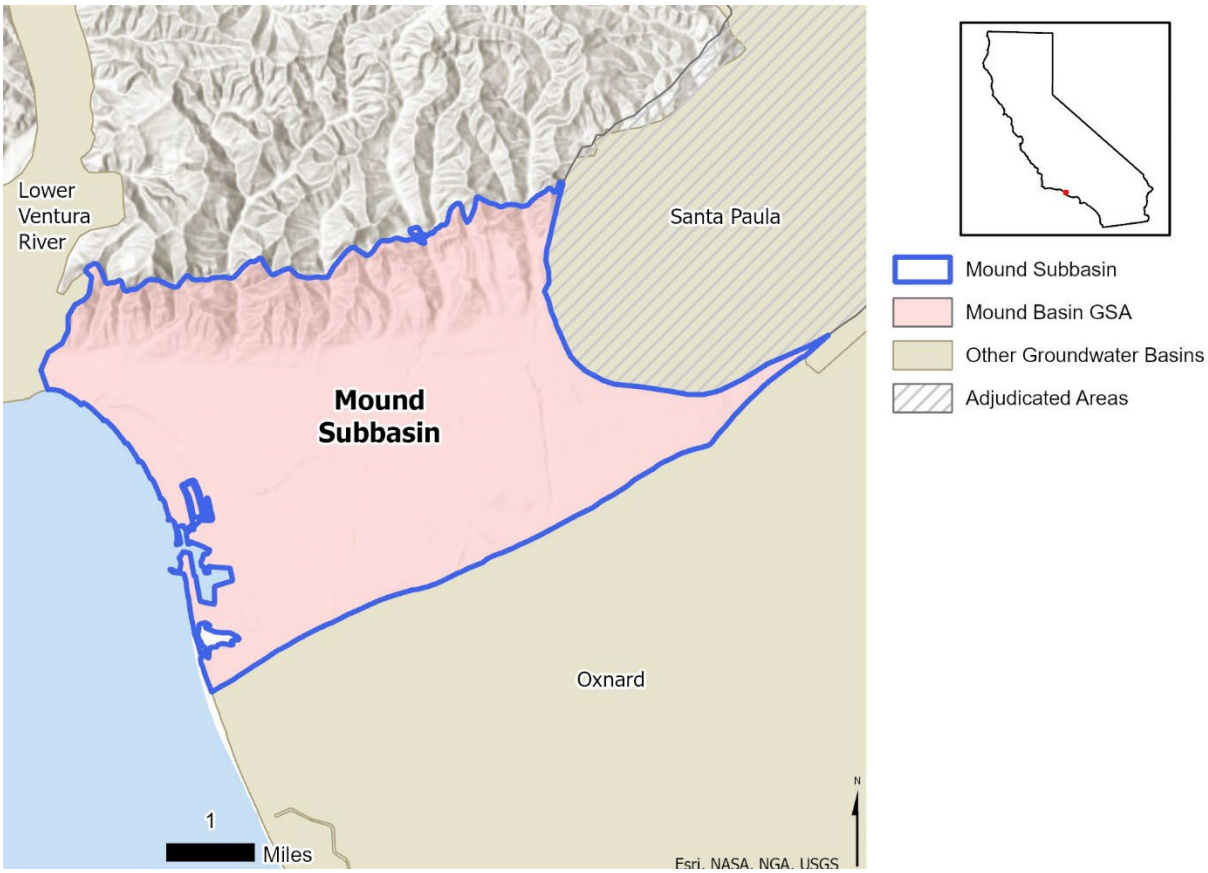

Figure 1: Mound Subbasin Location Map.

The Mound GSA is governed by a five-member board of directors with three seats for each of the GSA signatories, plus an environmental and an agricultural representative. The reader would benefit from identifying specific environmental users/groups in the Mound GSP. To perform public outreach, the GSA developed and maintained an interested parties list (although the GSP does not detail how the list was developed) with parties receiving email communications. The GSA also used their website, Facebook, public notices, newsletters, including putting notices/newsletters in English and Spanish in the Ventura Water bill which goes to every potable water user in the Subbasin, and engagement with the Santa Clara River Watershed Committee. The GSA held regular quarterly meetings, special meetings, and workshops which were publicly noticed and allowed for comment from members of the public. The GSA also allowed comment via an online form as well as through communication with GSA staff by phone or email.

The GSP's discussion and presentation of administrative information covers the specific items listed in the regulations in an understandable format using appropriate data. Other than detailed above, Staff are aware of no significant inconsistencies or contrary information to that presented in the GSP and therefore have no significant concerns regarding the quality, data, and discussion of this subject in the GSP. 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.[45]

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.[46] The GSP Regulations require a descriptive hydrogeologic conceptual model that includes a written description of geologic conditions, supported by cross sections and maps,[47] and includes a description of basin boundaries and the bottom of the basin,[48] principal aquifers and aquitards,[49] and data gaps.[50]

The Mound Subbasin has a synclinal structure trending east-west with sedimentary formations of both marine and terrestrial origin. East-west trending faulting and folding structures are present in the Mound Subbasin; fault displacement increases with depth.[51] The two youngest sedimentary geologic formations in the Mound Subbasin, the San Pedro Formation and Santa Barbara Formation, contain aquifers. [52] The hydrostratigraphic units are broken down into three aquifer systems: the shallow (termed "shallow alluvial deposits"), the upper aquifer system, and the lower aquifer system. The upper aquifer system contains the Mugu Aquifer, which is the first principal aquifer. The lower aquifer system contains the Mugu-Hueneme Aquitard and the Hueneme (the second principal aquifer). The Mugu and Hueneme are both members of the San Pedro Formation. The Mugu (shallower) is separated from the Hueneme (deeper) by an aquitard.

[45] 23 CCR § 354.12.
[46] 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.
[47] 23 CCR §§ 354.14 (a), 354.14 (c).
[48] 23 CCR §§ 354.14 (b)(2-3).
[49] 23 CCR § 354.14 (b)(4) *et seq.*
[50] 23 CCR § 354.14 (b)(5).
[51] Mound GSP, Section 3.1.2, p. 71.
[52] Mound GSP, Sections 3.1.2 and 3.1.4, pp. 70-72.

The lateral boundaries of the Mound Subbasin include the jurisdictional boundary of the adjudicated Santa Paula Subbasin to the east, the hydrologic divide separating the Lower Ventura River Subbasin to the northwest, the Pacific Ocean shoreline to the west, the geologic contact between the San Pedro Formation and the underlying Santa Barbara Formation to the north, and the Oxnard Subbasin to the south, which is defined by the jurisdictional boundary of the Fox Canyon Groundwater Management Agency.[53] The GSP defines the bottom of the Subbasin as the base of freshwater, which correlates with the bottom of the San Pedro Formation. The Mound GSA notes that no wells in the Subbasin are drilled deeper than the bottom of the San Pedro Formation, using this as further justification for defining the bottom of the San Pedro Formation as the bottom of the Subbasin.

The Mugu and Hueneme Aquifers are confined throughout most of the Subbasin except for a small section along the north Subbasin boundary where these aquifers outcrop at the surface along the hillsides and become unconfined. Both horizontal and vertical hydraulic conductivity decrease with depth. The storage coefficient increases with depth.[54] The GSP states that faults in the Mound Subbasin are partial barriers to groundwater flow.[55] Department staff encourage the GSA provide in the next periodic plan evaluation the progress made investigating and filling the data gap related to the specific and quantitative impacts of faults on groundwater flow. The Mugu and Hueneme Aquifers are used for agricultural, municipal, and industrial uses and similar volumes of groundwater are extracted from each aquifer.[56]

Overlying the San Pedro Formation are sediments referred to as “shallow alluvial deposits” which are separated from the San Pedro by “Fine-grained Pleistocene deposits”.[57] The Mound GSA contends the shallow alluvial deposits in the Mound Subbasin do not meet the definition of a principal aquifer for several reasons including:[58] 1. no current or planned groundwater extraction from wells screened in the deposits,[59] 2. poor quality groundwater with high concentrations of sulfate, chloride, nitrate, boron, and total dissolved solids,[60] and 3. lack of hydrologic connection between the deeper principal aquifers and the shallow alluvial aquifer.[61] Appendix G includes further analysis including references to other studies supporting the analysis of the Mound GSA and modeling results using piezometer data supporting the alluvial aquifer’s limited influence on the principal aquifers.[62]

[53] Mound GSP, Section 3.1.4.1.1, pp. 73–74.
[54] Mound GSP, Section 3.1.4.1, pp. 76–80; Table 3.1-01, p. 340.
[55] Mound GSP, Sections 3.1.4.1.2 and 3.1.4.1.3, pp. 74-80.
[56] Mound GSP, Section 3.1.4.4, pp. 87–88.
[57] Mound GSP, Figure 3.1-04, p. 256.
[58] Mound GSP, Section 3.1.4.1.3, pp. 76–77.
[59] Mound GSP, Table 3.1-02, pp. 341-342.
[60] Mound GSP, Section 3.1.4.3, pp. 83-87.
[61] Mound GSP, Section 3.1.4.1.3, pp. 76-80.
[62] Mound GSP, Appendix G, pp. 606–633.

Several public commenters questioned the Mound GSA with respect to identifying the shallow alluvial deposits as not meeting the criteria to be a principal aquifer. The main argument presented by these commenters for why the shallow alluvial deposits should be considered a principal aquifer is due to their importance to surface water ecosystems and groundwater dependent ecosystems (GDEs).

Department staff recognize the potential importance shallow aquifers have on supporting and sustaining ecosystems. However, identification of principal aquifers is the responsibility of the GSA, and upon review Department staff do not believe the Mound GSA has made an unreasonable or unwarranted choice. As defined in the GSP Regulations, principal aquifers are "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems."[63] The definition for principal aquifers in the GSP Regulations provides local agencies with discretion to determine what constitutes "significant or economic" when identifying the principal aquifers in a basin.

Although the shallow alluvial deposits are not designated by the GSA as a principal aquifer, the Plan proposes collecting additional information to better understand the hydraulic connectivity of the Santa Clara River, the shallow alluvial deposits, and groundwater uses and users, including surface water ecosystems and GDEs. The GSA should consider investigations that facilitate better understanding the fundamental questions regarding the potential volume of surface water affected by groundwater extractions, the timing and amount of gains or losses of water to the groundwater system, and the ability of well operation to influence those gains or losses (see Recommended Corrective Action 1).

While there is a recommended corrective action identified related to the hydraulic connectivity of the Santa Clara River and the alluvial deposits and principal aquifers, this does not preclude Plan approval at this time. Based on the identified actions in the GSP to investigate hydraulic connectivity, addressing this recommended corrective action by the next periodic update is appropriate. In general, the Plan's descriptions of the regional geologic setting, the Mound Subbasin's physical characteristics, the principal aquifers, and hydrogeologic conceptual model appear to utilize the best available science. Other than detailed above, Department Staff are aware of no significant inconsistencies or contrary technical information to that presented in 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,[64] a graph depicting change in groundwater storage,[65] maps and cross-

[63] 23 CCR § 351(aa).
[64] 23 CCR §§ 354.16 (a)(1-2).
[65] 23 CCR § 354.16 (b).

sections of the seawater intrusion front,[66] maps of groundwater contamination sites and plumes,[67] maps depicting total subsidence,[68] identification of interconnected surface water systems and an estimate of the quantity and timing of depletions of those systems,[69] and identification of groundwater dependent ecosystems.[70]

The GSP provides four hydrographs depicting long-term groundwater elevations from the 1930s to 2020.[71] The GSP states that the changes in groundwater levels can vary both by location and by aquifer, but the general pattern of decline and recovery are similar throughout the Subbasin.[72] The wells located across the Subbasin exhibit a rise and fall of groundwater levels consistent with the cumulative departure for rainfall.[73] In recent years, the groundwater levels have been declining, especially since 2010.[74] The GSP also provides the vertical hydraulic gradient calculated at clustered monitoring wells.[75] The GSP states that the hydraulic gradient along the fault at the boundary between Mound Subbasin and Santa Paula Subbasin is steeper compared to the remaining part of the Subbasin.[76] The hydraulic gradient data was used to calculate the water budget components.[77]

The GSP provides a graph depicting estimates of change in storage for annual change in volume in storage between seasonal high groundwater conditions.[78] The graph also shows cumulative change in storage and groundwater extraction for three water year types.[79] The GSP states that cumulative change in groundwater storage declined significantly during the drought of 1987-1990 and 2012-2016.[80] The change in storage quickly rebounded to pre-drought conditions after the 1987-1990 drought; however, there was no such recovery observed after the 2012-2016 drought.[81] The GSP states that the water years 1986 through 2015 represent the historical water budget, and the water years 2016 through 2019 represent the current water budget.[82] The change in storage between

[66] 23 CCR § 354.16 (c).
[67] 23 CCR § 354.16 (d).
[68] 23 CCR § 354.16 (e).
[69] 23 CCR § 354.16 (f).
[70] 23 CCR § 354.16 (g).
[71] Mound GSP, Figure 3.2-10 to 3.2-13, pp. 291-294.
[72] Mound GSP, Section 3.2.1.2, p. 93.
[73] Mound GSP, Section 3.2.1, pp. 91-96
[74] Mound GSP, Figure 3.2-10 to 3.2-13, pp. 291-294.
[75] Mound GSP, Table 3.2-01, p. 344.
[76] Mound GSP, Section 3.1.4.1.2, p. 75.
[77] Mound GSP, Table 3.3-01, p. 346.
[78] Mound GSP, Figure 3.2-17, p. 298.
[79] Mound GSP, Figure 3.2-17, p. 298.
[80] Mound GSP, Figure 3.2-17, p. 298.
[81] Mound GSP, Section 3.2.2, p. 96, Figure 3.2-17, p. 298.
[82] Mound GSP, Section 3.3.1-3.3.2, pp. 116-122.

1985 and 2015 is a decline in the storage of 469 acre-feet per year.[83] The change in storage between 2016 and 2019 is a decline in the storage of 147 acre-feet per year.[84]

The GSP states that seawater intrusion has not occurred in the past, and it is not currently occurring in the Subbasin because the principal aquifers extend 10 miles offshore to the edge of the continental shelf, where the aquifers crop out and are exposed to seawater.[85] According to the GSP, a groundwater model particle-tracking study suggests that the seawater may have moved into the submarine Hueneme aquifer offshore, which is approximately 10 miles from the shoreline.[86] The GSA's particle-tracking model estimates that seawater may have moved approximately 0.5 miles into the Hueneme aquifer outcrop offshore in the past 100 years, and is likely a considerable distance from the shoreline.[87] Based on its model, the GSP predicts that it would take multiple centuries at the current rate of seawater migration for seawater intrusion to reach the aquifers at the coastline.[88] The GSP further states that recent water quality data for wells near the coast show chloride concentrations below 100 milligrams per liter (mg/L); therefore, there is no evidence of seawater intrusion into the aquifers of Mound Subbasin. However, the GSP does acknowledge that the assumption that there is no connection between the principal aquifers and seawater for 10 miles offshore could potentially be flawed and that there could be a "short-circuit pathway" to the principal aquifers.[89]

Department staff agree that there is significant evidence that seawater intrusion is not currently occurring in Mound Subbasin. Because the Department's Bulletin 118 does not include the offshore area of Mound Subbasin within its subbasin boundary, seawater intrusion occurring 10 miles away from the shoreline is not currently having an effect on water quality within the Mound Subbasin, and that future modeling projections predict flow directions to reverse in the seaward direction, which would prevent seawater intrusion from reaching the basin. However, granting the possibility that seawater intrusion could occur in the future, due to a short-circuit pathway and/or potentially beyond the 50-year SGMA planning horizon, the GSA plans to monitor and develop a contingency plan for seawater intrusion as part of its projects and management actions. Department staff concur that this is a prudent approach.

The GSP states that the groundwater in the principal aquifers has a very different chemistry, influenced by minerals such as gypsum and other evaporites, than the groundwater in the fine-grained Pleistocene deposits.[90] The GSP identifies Total Dissolved Solids (TDS), sulfate, chloride, nitrate, and boron as the constituents of concern

[83] Mound GSP, Table 3.3-03, p. 350.
[84] Mound GSP, Table 3.3-03, p. 350.
[85] Mound GSP, Section 3.1.5, p. 89, Section 3.2.3, p. 98.
[86] Mound GSP, Section 4.6, p. 157.
[87] Mound GSP, Section 4.6, p. 157.
[88] Mound GSP, Section 4.6, p. 157.
[89] Mound GSP, Section 4.6, p. 157-158.
[90] Mound GSP, Section 3.1.4.3, p. 83.

in the Subbasin.[91] The Regional Water Quality Control Board has established water quality objectives for these five constituents of concern.[92] In general, the concentrations of water quality constituents are higher in the Hueneme aquifer than in the Mugu aquifer.[93] Groundwater quality data in both the Mugu and Hueneme aquifers have been relatively stable since the 1990s and the GSP states the stable groundwater quality indicates natural causes are the primary source of elevated concentrations of constituents in groundwater.[94] The GSP states the wells, which exhibit high concentrations of constituents of concern are likely influenced by shallow groundwater, possibly through a compromised seal or well casing.[95] Also, 16 leaking underground storage tanks and other soil and groundwater cleanup sites are identified as open cases in the Mound Subbasin on GeoTracker.[96] The GSP states that none of the contamination sites have reported impacts to the principal aquifers and that the principal aquifers are overlain by a thick (350 to 585 feet) layer of fine-grained Pleistocene deposits.

The GSP states that there is no documented groundwater-related subsidence in the Subbasin.[97] The GSP utilized Department's Interferometric Synthetic Aperture Radar (InSAR) data to describe current subsidence in the Subbasin. The GSP provides a map based on InSAR data, which shows the cumulative subsidence of 0 to 0.099 feet between 2015 and 2019.[98] The InSAR data covers the entire Subbasin. The GSP also provides subsidence data from a continuous Ground Positioning System (GPS) station, which has measured changes in ground elevation since 2000.[99] The GSP further states that a comparison of groundwater level data shows that subsidence in the Subbasin is not related to the groundwater levels, instead subsidence is caused by tectonic activity in the Subbasin.[100] The GSP identifies an area south of Ventura-Pitas Point Fault, which is subsiding approximately 5 mm per year due to tectonic activity.[101] However, the GSP acknowledges that further investigations may be needed to confirm groundwater level declines are not causing subsidence in the Subbasin.[102]

The GSP discusses interconnected surface water systems with the Santa Clara River and barrancas. The GSP states the lowest reach of Santa Clara River flows perennially during most years and much of the baseflow in the perennial reach (an annual discharge of approximately 1,500 acre-feet per year) is groundwater discharge from the semi-perched

[91] Mound GSP, Section 3.1.4.3, pp. 82-87.
[92] Mound GSP, Section 3.1.4.3, pp. 84-87, Table 3.1.03, p.343.
[93] Mound GSP, Section 3.2.4, p. 100.
[94] Mound GSP, Figure 3.1-21 to Figure 3.1-23, pp.273-275, Appendix J, Figure J-2, p. 737-747.
[95] Mound GSP, Section 3.1.4.3, p. 85.
[96] California State Water Resources Control Board, GeoTracker, https://geotracker.waterboards.ca.gov/.
[97] Mound GSP, Section 3.2.5, p. 102.
[98] Mound GSP, Figure 3.2.19, p. 300.
[99] Mound GSP, Section 3.2.5, p. 103.
[100] Mound GSP, Section 3.2.5, p. 103.
[101] Mound GSP, Section 3.2.5, p. 103.
[102] Mound GSP, Section 3.2.5, p. 103.

aquifer of the Oxnard Subbasin.[103] Based on comparison of groundwater elevation data in the shallow alluvial deposits and in the Mugu and Hueneme aquifers[104], geochemical data analysis[105], and groundwater model sensitivity analysis[106], the GSP concludes that groundwater extraction in the Mugu and Hueneme aquifers do not materially influence interconnected surface water systems.[107] However, although separated by a low-permeability interval, the GSP does not suggest that groundwater is physically disconnected from surface waters in the basin. Because the body of evidence does not preclude connection between the shallow alluvial deposits and the principal aquifers, Department staff agree that it is prudent to study this topic further as proposed. More discussion on this topic is included in Section 4.3.2.6.

The GSP states that brief surface water flows in the various barrancas in response to precipitation events "may be briefly connected with the Shallow Alluvial Deposits or perched groundwater, but this cannot be verified with available data."[108] The GSP further states that "there is no direct depletion of interconnected surface water in the barrancas because the Shallow Alluvial Deposits do not have any known groundwater extractions within the Mound Basin."

The GSP identifies and evaluates 11 potential GDEs based on the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset. After the evaluation of groundwater dependency, 10 potential GDEs were ruled out and not identified as GDEs.[109] One potential GDE, the Lower Santa Clara River and Estuary, was confirmed as a GDE because the vegetation in the area appears to be at least partially dependent on shallow groundwater.[110] The GSP states that the Lower Santa Clara River and Estuary is supported by tile-drain discharges, effluent from a wastewater treatment plant, and groundwater discharge from the semi-perched aquifer in the adjacent Oxnard Subbasin during dry months and drought periods.[111] The GSP further states that Lower Santa Clara River and Estuary has high ecological value because the area includes federally designated critical habitats such as southern California steelhead and provides potential habitat for special status plant and wildlife species.[112] The GSP states that the potential impact to this GDE was not considered during the development of sustainable management criteria because there is no groundwater extraction from the Shallow Alluvial

[103] Mound GSP, Section 3.2.6, p.103.
[104] Mound GSP, Appendix G, p. 616, Figure G-7, p. 628.
[105] Mound GSP, Section 3.2.4, pp. 101-102, Appendix G Section 3.3, p. 316.
[106] Mound GSP, Appendix G Section 3.4, pp. 617-618.
[107] Mound GSP, Appendix G, p. 616.
[108]"Mound GSP, Section 3.2.6, p.104.
[109] Mound GSP, Section 3.2.7, p. 106.
[110] Mound GSP, Section 3.2.7, p. 106.
[111] Mound GSP, Appendix H, p. 645.
[112] Mound GSP, Appendix H, p. 645.

Deposits, and the groundwater in the Shallow Alluvial Deposits are not affected by pumping in the principal aquifers.[113]

Overall, the Plan sufficiently describes the historical and current groundwater conditions throughout the Subbasin, and the information included in the Plan substantially complies with the requirements outlined in the GSP Regulations, except for the discussion related to interconnected surface water, which would benefit from further discussion and clarification in the GSP. Department staff expand on this topic in Section 4.3.2.6.

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,[114] and the sustainable yield.[115]

The GSP provides a historical water budget for water years 1986 through 2015 (30 years) for the Subbasin.[116] Total surface water inflows to the Subbasin average 168,300 acre-feet per year[117] and include Santa Clara River streamflow, ephemeral streamflow from northern foothills, ephemeral streamflow generated within the Subbasin (local runoff) in response to rainfall, and imported surface water.[118] Total surface water outflows from the Subbasin average 169,500 acre-feet per year and include Santa Clara River streamflow to the Pacific Ocean, ephemeral stream outflows, barrancas and storm drain discharges exiting the Subbasin, imported surface water consumptive use, mountain-front recharge from ephemeral streams in the northern Subbasin, and infiltration of the Santa Clara River and Hermon Barrancas flows to recharge the underlying shallow alluvial deposits during high flow years.[119] The GSP states that the largest inflows to the groundwater system include underflow from the Santa Paula Subbasin, areal recharge (the sum of infiltration of precipitation, municipal and industrial return flows, and agricultural returns), and mountain front recharge.[120] The outflows from the groundwater system include groundwater pumping from the Mugu and Hueneme aquifers, evapotranspiration from the shallow alluvial deposits, and discharge to title drains.[121] On average, the total groundwater inflow and groundwater outflow are approximately 13,000 acre-feet per year with a relatively small difference between the two (annual change in groundwater storage).[122] Department staff note the historical water budget for both groundwater inflow

[113] Mound GSP, Appendix H, p. 637.
[114] 23 CCR §§ 354.18 (a), 354.18 (c) *et seq*.
[115] 23 CCR § 354.18 (b)(7).
[116] Mound GSP, Section 3.3.1, p. 116.
[117] Mound GSP, Table 3.3-02, p. 347.
[118] Mound GSP, Table 3.3-02, p. 348.
[119] Mound GSP, Table 3.3-02, p. 348.
[120] Mound GSP, Table 3.3-03, pp. 349-350.
[121] Mound GSP, Section 3.3.1, p. 117.
[122] Mound GSP, Table 3.3-03, pp. 349-350.

and outflow components the totals do not equal the total amount in the water budget table provided, and therefore these values should be checked for accuracy.

The cumulative groundwater storage fluctuates in response to the annual variability of inflows and outflow to the groundwater system with an average net decline in groundwater in storage of 469 acre-feet per year.[123] The GSP acknowledges that ”[t]his suggests that a relatively minor amount of overdraft may have occurred during the historical period equal to approximately 6.3% of the average groundwater extraction rates during that timeframe.”[124] However, the GSP claims that ”these values are considered to be within the range of uncertainty of the water budget calculations and no undesirable results have been reported historically.

The GSP considers water years 2016 through 2019 representative of current hydrology, water supply and demand, and land use.[125] The largest source of surface water inflow and outflow for the Subbasin during the current period is the Santa Clara River, consistent with the historical water budget.[126] A significant difference is that both average inflow from the Santa Clara River and imported water from Casitas Municipal Water District during the current water budget period are less than half of the values during the historical water budget period.[127] Compared to the historical period, both the total surface water inflow and total surface water outflow decrease significantly by approximately 54% during the current period due to dry conditions. Total surface water inflow is 76,700 acre-feet per year and total surface outflow is 77,800 acre-feet per year for the current period. Differences in the groundwater flows between the current and historical period include a 131% increase in groundwater underflow from the Mound Subbasin to the Oxnard Subbasin,[128] a reversal of underflow from seaward to landward with similar volume,[129] a decrease in groundwater pumping rates, recharge volumes,[130] evapotranspiration, and tile drains.[131]

The GSP provides projected water budgets for three scenarios: Baseline Scenario, 2030 Scenario, and 2070 Scenario, which assume various levels of climate change and sea level rise.[132] The projected water budgets are developed for a 75-year period (2022-2096) which is divided into three periods, including the 20-year implementation period required under SGMA (water years 2022-2041), the 30-year sustaining period under SGMA (water years 2042-2071), and a 25-year post-SGMA period (water years 2072-2096). [133]

[123] Mound GSP, Section 3.3.1, p. 119.
[124] Mound GSP, Section 3.3.1.2, p. 121.
[125] Mound GSP, Sections 3.3.2, p. 122.
[126] Mound GSP, Sections 3.3.2, p. 123.
[127] Mound GSP, Sections 3.3.2, p. 123.
[128] Mound GSP, Table 3.3-03, pp. 349-350.
[129] Mound GSP, Table 3.3-03, pp. 349-350.
[130] Mound GSP, Section 3.3.2, p. 123.
[131] Mound GSP, Table 3.3-03, pp. 349-350.
[132] Mound GSP, Section 3.3.3.1.1. p. 126.
[133] Mound GSP, Section.3.3.3, p. 124.

Average annual rainfall decreases minimally in the projected Baseline Scenario. Long-term average surface water inflow and outflow in the Santa Clara River during the projected water budget period slightly decrease. Rainfall in the projected water budget decreases by 0.5%, and therefore surface water flows from ephemeral streams in the northern part of the Subbasin decrease by a similar margin, the decrease in surface water flow for the Santa Clara River decreases by 8.9%. Since flows for both the ephemeral streams and Santa Clara River are sourced from rainfall, the discrepancy between the projected decrease in expected flow should be explained. Also, the net direction of groundwater underflow for all aquifers combined is forecasted to be nearly always seaward."[134] Department staff would like the GSP to clarify why net groundwater flow from the Subbasin to the ocean increases when sea level rise is projected to occur.

Imports of surface water from Casitas MWD are expected to increase by 61%. This increase of 2,270 acre-feet per year along with the proposed connection with the Calleguas Municipal Water District that will allow the City to access its 10,000 acre-feet per year of entitlement from the state water project. However, the GSP does not discuss the reliability of these proposed supplies and if there may be a need to offset those supplies with groundwater pumping if they are not available in any given year. Department staff recommend the GSA discuss the reliability of proposed increases in surface water supply that will offset current groundwater pumping in the Subbasin (see Recommended Corrective Action 2).

The surface water and groundwater exchanges in the Santa Clara River and Harmon Barrancas also increase significantly from less than 20 acre-feet per year to 1,300 acre-feet per year in the projected Baseline Scenario. The largest difference between the projected Baseline Scenario compared to the historical and current groundwater budgets is the overall projected increase in underflow into Mound Subbasin, due to projected increases in groundwater elevations in the Oxnard Subbasin with GSP implementation causing an increase in the hydraulic gradient towards the Mound Subbasin.[135] Department Staff encourage the GSP to clarify how much of the increase in surface water and groundwater exchanges is from the expected increase in underflow into the Mound Subbasin from the Oxnard Subbasin and how much is from other components. The net direction and magnitude of groundwater underflow across the coastline (between Mound Subbasin and areas to the west where the aquifers underlie the seafloor) during the Baseline Scenario also changed substantially forecasted to be nearly always seaward.[136] Groundwater inflow from the Santa Paula Subbasin is expected to decrease compared to the historical and current water budget periods. The GSP states that the effect of the simulated climate change scenarios (2030 and 2070) on the projected groundwater water budget components is small.

[134]Mound GSP, Section 3.3.3.1, pp. 132-133.
[135]Mound GSP, Section 3.3.3.1, p. 132.
[136]Mound GSP, Section 3.3.3.1, pp. 132-133.

The GSP states that modeling results show that the projected inflows and outflows will be approximately balanced without exceeding the minimum thresholds during the 20-year GSP implementation period.[137] Therefore, the GSP estimates the sustainable yield is approximately equal to the projected extraction, averaging 7,900 to 8,200 acre-feet per year depending on climate change assumptions.[138] The GSP recognizes that "increasing extraction rates could increase underflow from adjacent Subbasins, thereby increasing the sustainable yield of the Subbasin; however, this could impact sustainable management of the adjacent Santa Clara and/or Oxnard Subbasins and is not included [in] the sustainable yield estimates at this time."[139]

While there are recommended corrective actions related to reliability of projected surface water supplies and the potential implications if those supplies are not available on sustainability, this does not preclude Plan approval at this time. Allowing the GSA time to update the GSP to address these recommended corrective actions by the next periodic update is appropriate. Other than detailed above, Department Staff are aware of no significant inconsistencies or contrary information to that presented historical, current, and projected water budget conditions and have no significant concerns regarding the quality, data, and discussion of this subject in the GSP.

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.[140]

The GSP does not utilize management areas.

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.[141]

[137] Mound GSP, Section 3.3.4.2, p. 135.
[138] Mound GSP, Section 3.3.4.2, p. 135.
[139] "Mound Subbasin GSP, Section 3.3.4.2, p. 135.
[140] 23 CCR § 354.20.
[141] 23 CCR § 354.22 *et seq*.

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.[142]

The GSP states the following as the sustainability goal:

> "The goal of this Groundwater Sustainability Plan (GSP) is to sustainably manage the groundwater resources of the Mound Basin for the benefit of current and anticipated future beneficial users of groundwater and the welfare of the general public who rely directly or indirectly on groundwater. Sustainable groundwater management will ensure the long-term reliability of the Mound Basin groundwater resources by avoiding undesirable results pursuant to the Sustainable Groundwater Management Act (SGMA) no later than 20 years from GSP adoption through implementation of a data-driven and performance-based adaptive management framework. It is the express goal of this GSP to develop sustainable management criteria and plan implementation measures to avoid undesirable results…"[143]

The GSA describes "…measures that will be implemented to ensure that the Basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation."[144] The GSP estimates that the sustainable yield is 7,900 to 8,200 acre-feet per year (AFY)[145] and that future beneficial use will not exceed the sustainable yield, explaining that "…modeling projections developed for the water budget suggest that the measurable objectives for the applicable sustainability indicators will be met without the need for overdraft mitigation or drought offset measures."[146] However, the GSP does include management actions "…to respond to potential changing conditions in the Basin and to help protect groundwater quality."[147]

Department staff conclude that the GSP's discussion and presentation of information on the sustainability goal covers the specific items listed in the GSP Regulations in an understandable format using appropriate data.

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

[142] 23 CCR § 354.24.
[143] Mound GSP, Section 4.2, p. 138.
[144] Mound GSP, p. 139.
[145] Mound GSP, Section 4.5.2, p. 152.
[146] Mound GSP, Section 6.1, p. 216.
[147] Mound GSP, Section 6.1, p. 216.

undesirable results.[148] 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[149] – 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.[150] 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.[151]

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.[152] GSAs are required to describe how conditions at minimum thresholds may affect beneficial uses and users,[153] 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.[154]

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.[155] GSP Regulations also require that the measurable objectives be established based on the same metrics and monitoring sites as those used to define minimum thresholds.[156]

[148] 23 CCR § 351(ah).
[149] Water Code § 10721(x).
[150] 23 CCR §§ 354.26 (a), 354.26 (b)(c).
[151] 23 CCR § 354.26 (b)(2).
[152] 23 CCR § 354.28 (b)(1).
[153] 23 CCR § 354.28 (b)(4).
[154] 23 CCR § 354.28 (b)(2).
[155] 23 CCR § 354.30 (a).
[156] 23 CCR § 354.30 (b).

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.[157]

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.[158]

The GSP defines significant and unreasonable as "…chronic lowering of groundwater levels that causes a significant number of wells in the Basin to no longer be capable of being operated as designed for the confined aquifers in the Mound Basin."[159] The GSP defines undesirable results as minimum threshold exceedances in 50% of the groundwater level monitoring sites in either principal aquifer and sets minimum thresholds at the historical low groundwater level for each representative monitoring well.[160]

The Mound GSP contends that "…chronic lowering of groundwater levels has not historically occurred and is not currently occurring in the Basin."[161] The GSP indicates that "…there is a high enough water column in most wells to support large groundwater declines before a significant loss of production capacity would occur,"[162] and provides a conservative analysis of the elevation at which wells could become inoperable by adding the expected pumping drawdown (40 feet at an assumed 2,000 gallons per minute) to the elevation of the top of each principal aquifer at each representative well.[163] In the end, these calculated elevations were not used as minimum thresholds because the GSP used the historic lows contending that these levels are generally lower than the measured or estimated historic low which were used as minimum thresholds to avoid land subsidence. However, there are two representative wells (022N22W10N03S and 02N22W08P01S) at which the estimated height where wells could lose production capability[164] is higher than the historic low used as the minimum threshold[165] for the well. The GSP should explain

[157] 23 CCR § 354.26 (d).
[158] 23 CCR § 354.28(c)(1) *et seq*.
[159] Mound GSP. Section 4.4.1, p. 142.
[160] Mound GSP, Section 4.4.2, p. 143.
[161] Mound GSP, Section 4.4.1, p. 142.
[162] Mound GSP, Section 4.4.1, p. 142.
[163] Mound GSP, Appendix I, pp. 713-714.
[164] Mound GSP, Table I-1, p. 713.
[165] Mound GSP, Table 4.1-01, p. 372.

how the minimum threshold for these two wells will not result in undesirable results as defined for chronic lowering of groundwater levels.

In addition to avoiding subsidence, the GSP states that using the historical low will "…ensure that underflow to/from the Oxnard Basin is not unduly impacted."[166] The GSP should describe if any impacts occurred in adjacent basins when the historic lows were reached, if those impacts to adjacent basins were significant and unreasonable, and indicate whether those same impacts would occur if water levels were to drop to the proposed minimum threshold.

The GSP describes the causes of conditions that would lead to undesirable results, including droughts and/or higher than expected extraction rates in the Mound, Oxnard, and/or Santa Paula basins.[167] The GSP describes the quantitative criteria for significant and unreasonable lowering of groundwater levels as "minimum threshold exceedances in 50% of the groundwater level sites in either principal aquifer" and that this would "indicate widespread significant and unreasonable effects in either principal aquifer leading to undesirable results in the Basin."[168] However, with water level minimum thresholds being selected to avoid subsidence and certain areas being more susceptible to subsidence, the GSA may need to consider that minimum threshold exceedances may not need to be widespread to experience significant and unreasonable effects. For further discussion on this please see Section 4.3.2.5.

The GSP establishes measurable objectives to provide "…a reasonable margin of operational flexibility under adverse conditions."[169] This margin of operational flexibility was calculated from "…the maximum modeled groundwater level decline during the 50-year GSP planning and implementation horizon…"[170] The interim milestones were established by a linear path between the minimum threshold and the measurable objective for each 5-year increment over 20 years.

While there are recommended corrective actions related to clarifying the definition of undesirable results for water levels, this does not preclude Plan approval at this time. Allowing the GSA time to update the GSP to address these recommended corrective actions by the next periodic update is appropriate. Other than detailed above, Department Staff are aware of no significant inconsistencies or contrary information to that presented in this section of the GSP and have no significant concerns regarding the quality, data, and discussion of this subject in the GSP.

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

[166] Mound GSP, Section 4.4.2.1, p. 145
[167] Mound GSP, Section 4.4.1, p. 142.
[168] Mound GSP, Section 4.4.1, p. 143.
[169] Mound GSP, Section 4.4.3.1, p. 149.
[170] Mound GSP, Section 4.4.3.1, p. 149.

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 GSP defines significant and unreasonable as "…reduction of groundwater storage that will likely cause other sustainability indicators to have undesirable results."[172] The GSP indicates that "…the effects of decreasing groundwater storage would manifest as effects for other sustainability indicators; the reduction of groundwater storage is associated with chronic lowering of groundwater levels and subsidence."[173] Based on this premise that groundwater storage will be manifest by other sustainability indicators the GSP states "…the qualitative description of undesirable results is reduction of groundwater storage that will likely cause other sustainability indicators to have undesirable results."[174]

In defining undesirable results, the GSP states that "…groundwater extractions exceeding the minimum threshold in any given year will not automatically be considered to indicate undesirable results are occurring in the Basin."[175] The GSP also states that if a "…minimum threshold is exceeded, [the Mound GSA] will assess the other sustainability indicators to determine if undesirable results are occurring or are likely to occur."[176]

The GSP defines minimum thresholds as "…the estimated sustainable yield of 8,200 AF/yr of the Subbasin calculated over a long-term, balanced hydrologic period."[177] The GSP has provided a minimum threshold that is the sustainable yield, which is a rate of extraction that needs to be evaluated over an averaging period, but does not indicate what the averaging period is. The GSA should provide a total volume of groundwater that can be withdrawn from the Subbasin without causing conditions that may lead to undesirable results.[178] Furthermore, the GSP should clearly define the combination of threshold exceedances that constitute significant and unreasonable reduction in groundwater storage.

The GSP states that the measurable objective "…is 90% of the sustainable yield (i.e., 7,400 AF/yr), based on professional judgement and to account for uncertainty in the sustainable yield estimate."[179] The measurable objective should be re-evaluated to be consistent with the minimum threshold modifications discussed in the paragraph above.

[171] 23 CCR § 354.28(c)(2).
[172] Mound GSP, Section 4.5.1, p. 151.
[173] Mound GSP, Section 4.5.1, p. 151.
[174] Mound GSP, Section 4.5.1, p. 151.
[175] Mound GSP, Section 4.5.2, p. 152.
[176] Mound GSP, Section 4.5.1, p. 152.
[177] Mound GSP, Section 4.5.2, p. 152.
[178] 23 CCR § 354.28 (c)(2).
[179] Mound GSP, Section 4.5.3.1, p. 156.

The GSP describes the causes of conditions that would lead to undesirable results, including droughts and/or higher than expected extraction rates in the Mound, Oxnard, and/or Santa Paula basins.[180]

Staff conclude that the explanation and justification in the GSP of sustainable management criteria for reduction in groundwater storage is reasonable and that this effort is within the range of what staff consider professional and acceptable under the circumstances.

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.[181]

The Mound GSP contends that "…available data indicate that seawater has not been present in the onshore portions of the principal aquifers to date"[182] and cites evidence that seawater intrusion is unlikely to occur because exposure of the principal aquifers to the sea floor doesn't occur until approximately 10 miles offshore.[183] The GSP provides further evidence through a particle-tracking analysis indicating that even if the principal aquifers were exposed at the coastline, there would be "…an approximate average of 500 and 800 ft of potential migration (under the worst-case scenario) over the 20-year implementation and 50-year planning periods, respectively."[184] Although this evidence indicates a low likelihood of seawater intrusion during the Planning and Implementation horizon, the GSP does provide sustainable management criteria.

The GSP defines significant and unreasonable conditions as "…seawater intrusion extending east of Harbor Boulevard into areas with current or anticipated future beneficial uses."[185] The GSP describes the causes of conditions that would lead to undesirable results, including a near-shore "short-circuit pathway" for seawater to enter the principal aquifers or onshore flow rates "…significantly greater than simulated…" which could result from the same causes cited for chronic lowering of groundwater levels.[186]

The GSP defines minimum thresholds "…as a 150 mg/L chloride concentration isocontour along Harbor Boulevard"[187] and further states that "…for practical purposes of monitoring

[180] Mound GSP, Section 4.5.1, p. 151-152.
[181] 23 CCR § 354.28(c)(3).
[182] Mound GSP, Section 4.6, p. 157.
[183] Mound GSP, Section 4.6, p. 157.
[184] Mound GSP, Section 4.6, p. 158.
[185] Mound GSP, Section 4.6.1, p. 159.
[186] Mound GSP, Section 4.6.1, p. 159-160.
[187] Mound GSP, Section 4.6.2.1, p. 162.

the isocontour, minimum thresholds are set at the monitoring and production wells used to define the isocontour" which are located along Harbor Boulevard."[188]

The measurable objectives and interim milestones for seawater intrusion is "…based on the chloride measurable objectives and interim milestones developed for the degraded water quality sustainability indicator."[189] Based on data indicating that existing water quality is slightly poorer in the Hueneme Aquifer, the GSP establishes a measurable objective of 75 milligrams per liter (mg/L) for the Mugu Aquifer and 100 mg/L for the Hueneme Aquifer.[190] The interim milestones are set as the same as the measurable objective.[191]

Staff conclude that the explanation and justification in the GSP of sustainable management criteria for seawater intrusion is reasonable and that this effort is within the range of what staff consider professional and acceptable under the circumstances.

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.[192]

The GSP defines the significant and unreasonable effects for degraded water quality as "…groundwater quality that exceed historical concentrations and significantly impacts beneficial uses."[193] The GSP describes the potential causes of undesirable results as "…increases in Mugu Aquifer extraction could potentially induce downward movement of very poor-quality water from the shallow groundwater system into the Mugu Aquifer…" and "…improperly constructed wells that remain in use and abandoned wells that have not been properly destroyed (backfilled) can provide conduits for downward movement of very poor-quality water from the shallow groundwater system into the Mugu and/or Hueneme aquifers."[194]

The GSP establishes minimum thresholds for five chemical constituents: nitrate, total dissolved solids (TDS), sulfate, chloride, and boron and generally sets the minimum

[188] Mound GSP, Section 4.6.2.1, p. 161.
[189] Mound GSP, Section 4.6.3, p. 165.
[190] Mound GSP, Table 4.1-03, p. 375.
[191] Mound GSP, Section 4.6.3, p. 166.
[192] 23 CCR § 354.28(c)(4).
[193] Mound GSP, Section 4.7.1, p. 168.
[194] Mound GSP, Section 4.7.1, p. 168.

threshold at the Regional Water Quality Control Board's (RWQCB's) Water Quality Objectives (WQO), which are established standards "…designed to protect beneficial uses and preserve existing water quality at the time of the RWQCB Basin Plan."[195] The minimum threshold for TDS in the Hueneme Aquifer is set slightly higher than the WQO, because ambient concentrations are close to the WQO.[196] The GSP contends this is not an issue because "…there are no direct potable uses of groundwater and the City of Ventura manages water quality through blending within the system."[197]

The GSP defines the combination of minimum threshold exceedances that would trigger undesirable results for water quality as when "…all representative monitoring wells in a principal aquifer exceed the minimum threshold concentration for a constituent for two consecutive years."[198] Department staff question whether the proposed definition of undesirable results not occurring until 100 percent of monitoring sites exceed their minimum thresholds is a realistic value to avoid significant and unreasonable water quality conditions in the Subbasin. Under this definition, localized or regional exceedances could impact large portions of the Subbasin without the GSA determining this is undesirable. Department staff recommend the GSA amend the quantitative definition of undesirable results to account for localized threshold exceedances or provide additional information to the GSP to support why undesirable results will not occur until minimum thresholds are exceeded in 100 percent of representative monitoring sites (see Recommended Corrective Action 3).

The GSP establishes measurable objectives "…to preserve existing water quality for beneficial uses in the Basin"[199] and "…provide a reasonable range of operational flexibility above the minimum thresholds and historical concentrations observed in the Basin…"[200] The measurable objective values for each constituent are explained and either correspond to slightly above ambient groundwater conditions or at consumer acceptance limits established by the State Water Resources Control Board's Division of Drinking Water.[201] The GSP sets the interim milestones as the same as the measurable objective.[202]

While there are recommended corrective actions related to clarifying the definition of undesirable results for water quality, this does not preclude Plan approval at this time. Allowing the GSA time to update the GSP to address these recommended corrective actions by the next periodic update is appropriate. Staff are aware of no significant inconsistencies or contrary information to that presented in this section of the GSP and

[195] Mound GSP, Section 4.7.2.1, p. 170.
[196] Mound GSP, Table 4.1-02, pp. 373-374.
[197] Mound GSP, Section 4.7.2.1, p. 175.
[198] Mound GSP, Section 4.7.1, p. 168.
[199] Mound GSP, Section 4.7.3, pp. 173-174.
[200] Mound GSP, Section 4.7.3, p. 174.
[201] Mound GSP, Table 4.1-02, pp. 373-374.
[202] Mound GSP, Section 4.7.3.1, p. 174.

have no significant concerns regarding the quality, data, and discussion of this subject in the GSP.

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.[203] 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.[204]

The GSP defines significant and unreasonable as "[l]and subsidence in the Coastal Area that exacerbates coastal hazards associated sea level rise or that impacts the City of Ventura's sewer mains along Harbor Boulevard and/or that substantially interferes with surface land uses in elsewhere in the Basin."[205]

The GSP defines undesirable results for the western half of the Subbasin as water level "…minimum threshold exceedances in 50% of monitoring sites."[206] Undesirable results for the eastern half of the Subbasin "…is as follows: in any one year, there will be zero exceedances of the minimum thresholds for subsidence *caused by groundwater conditions*, as indicated by InSAR. To determine whether InSAR-indicated land surface elevation changes were caused by groundwater conditions, InSAR data will only be considered when groundwater levels are below historical low levels. The InSAR data will be adjusted to account for subsidence related to tectonic activity using continuous GPS data and historical trends to determine if the minimum threshold has been exceeded."[207]

The GSP defines minimum thresholds in the western half of the Subbasin using groundwater levels as a proxy due to inadequate coverage of InSAR data with the water level minimum thresholds set at "…the historical low groundwater levels"[208] due to "…preconsolidation stress, the effective stress threshold at which inelastic compaction begins, generally is exceeded when groundwater levels decline past historical low levels."[209] Given that the GSP has defined significant and unreasonable conditions of "…subsidence in the Coastal Area that exacerbates coastal hazards associated sea level rise", Department staff question whether the GSP's definition of undesirable results as

[203] 23 CCR § 354.28(c)(5).
[204] 23 CCR §§ 354.28(c)(5)(A-B).
[205] Mound GSP, Section 4.8.1, p. 175.
[206] Mound GSP, Section 4.8.1, p. 176.
[207] Mound GSP, Section 4.8.1, p. 177.
[208] Mound GSP, Section 4.8.2.1, p. 178.
[209] Mound GSP, Section 4.8.2.1, p. 178.

"minimum threshold exceedances in 50% of the groundwater level sites in either principal aquifer" indicating "widespread significant and unreasonable effects" will avoid significant and unreasonable effects since the localized Coastal Area is more susceptible to subsidence. Department staff recommend the GSA provide more information about how allowing 50% of monitoring sites to exceed minimum threshold will prevent the occurrence of significant and unreasonable land subsidence in the Coastal Area (see Recommended Corrective Action 4).

In the eastern half of the Subbasin, InSAR is used with minimum thresholds set at 0.1 ft/year based on a literature review of subsidence case studies which indicated that "…the rates of subsidence that led to undesirable results ranged from approximately 1.2 to 4.5 inches per year (0.1 to 0.38 feet per year [ft/yr])."[210]

The GSP sets measurable objectives for the western half of the Subbasin using water levels as a proxy as described in the water level sustainable management criteria by adding "[t]he maximum projected groundwater level decline..." to the minimum threshold.[211] In the eastern half of the Subbasin, the GSP sets the measurable objective "…equivalent to no measurable subsidence" with the estimated error of the InSAR data being 0.1 ft.[212]

The GSP's undesirable result description reads, "[l]and subsidence in the Coastal Area that exacerbates coastal hazards associated sea level rise or that impacts the City of Ventura's sewer mains along Harbor Boulevard and/or that substantially interferes with surface land uses in elsewhere in the Basin."[213] The GSP describes the "…conditions that could lead to subsidence is groundwater levels that decline below historic low levels" and that the causes of such are the same as for chronic lowering of groundwater levels.[214]

Because water levels are used as a proxy in the western half of the Subbasin, the measurable objectives for land subsidence are the same as those described for water levels. For the eastern half of the Subbasin, the measurable objective for land subsidence is no land subsidence, or 0.1 feet per year which "…is within the noise of the data collection and processing and is considered equivalent to no measurable subsidence…"[215] The interim milestones for the western half of the Subbasin are the same as those described for chronic lowering of water levels. For the eastern half of the Subbasin, the interim milestones are set as the same as the measurable objective.[216]

While there are recommended corrective actions related to clarifying the definition of undesirable results for land subsidence, this does not preclude Plan approval at this time.

[210] Mound GSP, Section 4.8.2.1, p. 179.
[211] Mound GSP, Section 4.4.3.1, p. 149.
[212] Mound GSP, Section 4.8.3.1, p. 184.
[213] Mound GSP, Section 4.8.1, p. 175.
[214] Mound GSP, Section 4.8.1, p. 175.
[215] Mound GSP, Section 4.8.3.1, p. 184.
[216] Mound GSP, Section 4.8.3.2, pp. 184-185.

Allowing the GSA time to update the GSP to address these recommended corrective actions by the next periodic update is appropriate. Staff are aware of no significant inconsistencies or contrary information to that presented in this section of the GSP and have no significant concerns regarding the quality, data, and discussion of this subject in the GSP.

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.[217] The GSP Regulations require that a Plan identify the presence of interconnected surface water systems in the basin and estimate the quantity and timing of depletions of those systems.[218] 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.[219]

The Mound GSP contends that depletions of interconnected surface water is not an applicable sustainability indicator because (1) "…surface water is not materially affected by groundwater extraction", (2) "[t]here is no direct depletion of interconnected surface water … because there is no groundwater extraction from the Shallow Alluvial Deposits", and (3) "…the thick zone of fine-grained materials that lies between the Shallow Alluvial Deposits and the Mugu Aquifer significantly limits the propagation of hydraulic responses between these units."[220] To support these conclusions, the GSP provides reference to portions of the basin setting[221] and further analysis in Appendix G.[222] Appendix G states that there is "…no discernible effect of groundwater-level declines in the principal aquifers on shallow-alluvial groundwater levels…".[223]

Based on evidence presented in the GSP, Department staff conclude interconnected surface water may exist within the basin. The GSP Regulations state that a GSA able to demonstrate one or more sustainability indicators are not present and are not likely to occur in the basin is not required to develop sustainable management criteria for those indicators. [224] Demonstration of applicability (or non-applicability) of sustainability indicators must be supported by best available information and science and should be provided in descriptions throughout the GSP (e.g., information describing basin setting, discussion of the interests of beneficial users and uses of groundwater). For indicators

[217] Water Code § 10721(x)(6).
[218] 23 CCR § 354.16 (f).
[219] 23 CCR § 354.28 (c)(6).
[220] Mound GSP, Section 4.1, p. 136.
[221] Mound GSP, Sections 3.1.4.2, 3.2.6, and 3.3, pp. 81-82, 103-105, 107-135.
[222] Mound GSP, Appendix G, pp. 606-633.
[223] Mound GSP, Appendix G Section 3.2, p. 616.
[224] 23 CCR §354.26(d)

where the physical conditions for the sustainability indicator do not exist, such as seawater intrusion for basins significantly inland of the sea, by default undesirable results could not occur. However, for sustainability indicators where the conditions for that indicator do exist, the GSA must define what undesirable results would be and then either set sustainable management criteria or demonstrate that the defined undesirable results are not present and not likely to occur.

Although the GSP and Appendix G provide significant evidence supporting the claim that any effect of groundwater extraction on surface water would be slight, it does not appear from the information presented that groundwater is physically disconnected from surface water, leaving open the possibility that interconnected surface water may exist within the basin. Because the GSA did not undertake an analysis of thresholds that would be critical to beneficial uses of surface water, under the assumption that groundwater extraction was not affecting surface flow, it is not known what threshold might be significant. Conversely, it is also not known what basin management would be within the authority of the GSA to manage to those thresholds, especially considering that current conditions may have been in place for years, and any effect of groundwater pumping, even if "undesirable," could predate 2015 conditions. Nevertheless, the GSA should attempt to better understand the relationship (quantity and timing) between groundwater extraction from the principal aquifer and surface water flow, if any. If the GSA determines through further investigation that a material effect could occur that would cause significant and unreasonable effects to beneficial uses and users of interconnected surface water, the GSA should define the significant and unreasonable conditions that constitute undesirable results and continue to monitor conditions in the Subbasin to verify that the defined undesirable results are not present and not likely to occur[225] (see Recommended Corrective Action 5a).

Department staff understand that quantifying depletions of surface water from groundwater extractions is a complex task that likely requires developing new, specialized tools, models, and methods to understand local hydrogeologic conditions, interactions, and responses. During the initial review of GSPs, Department staff have observed that most GSAs have struggled with this new requirement of SGMA. However, staff believe that most GSAs will more fully comply with regulatory requirements after several years of Plan implementation and is supportive of the Mound GSA including project and management action 5 in their Plan 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 and define the significant and unreasonable conditions that constitute undesirable results is appropriate and remains consistent with SGMA's timelines and local control preferences.

[225] 23 CCR § 354.26 (d).

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 5b). 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 5c). 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 5d).

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.[226] Specifically, a monitoring network must be able to monitor impacts to beneficial uses and users,[227] monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds,[228] capture seasonal low and high conditions,[229] include required information such as location and well construction and include maps and tables clearly showing the monitoring site type, location, and frequency.[230] Department staff encourage GSAs to collect monitoring data as specified in the GSP, follow SGMA data and reporting standards,[231] fill data gaps identified in the GSP prior to the first periodic evaluation,[232] update monitoring network information as needed, follow monitoring best management practices,[233] and submit all monitoring data to the Department's Monitoring Network Module immediately after collection including any additional groundwater

[226] 23 CCR § 354.32.
[227] 23 CCR § 354.34(b)(2).
[228] 23 CCR § 354.34(b)(3).
[229] 23 CCR § 354.34(c)(1)(B).
[230] 23 CCR §§ 354.34(g-h).
[231] 23 CCR § 352.4 *et seq*.
[232] 23 CCR § 354.38(d).
[233] Department of Water Resources, 2016, Best Management Practices and Guidance Documents.

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 GSP states that there are 23 monitoring wells in the existing groundwater level monitoring network.[234] Fourteen wells are screened solely in the Hueneme aquifer and five wells are screened solely in the Mugu aquifer, this accounts for 19 monitoring wells and the reader would benefit from the GSA clarifying the actual number of monitoring wells in the Subbasin.[235] The GSP states that data collected from all the monitoring sites will be used to monitor relevant sustainability indicators and no subset of wells are designated as representative monitoring sites.[236] The GSP states that the groundwater elevations have been measured on a monthly, bi-monthly, or quarterly basis exceeding the SGMA requirement of semi-annual measurements, and will be measured quarterly or more frequently, as feasible.[237] Additionally, a partner agency collects automated groundwater elevation measurements at four-hour intervals in four monitoring wells screened in principal aquifers.[238]

The GSP proposes to use the groundwater level monitoring network as a proxy for the groundwater storage monitoring network because changes in groundwater storage are not directly measurable but are directly dependent on changes in groundwater levels.[239]

Although there is no seawater intrusion occurring in the Subbasin,[240] the GSA still plans to monitor for chloride and other dissolved constituents at monitoring sites near the coast. The GSP states that a subset of groundwater quality monitoring network wells, and a new set of wells to be constructed, will be used for seawater intrusion monitoring and will monitor each principal aquifer.[241] The GSA plans to sample and analyze the wells for chloride and other dissolved constituents and parameters at least annually.[242]

The GSP states that there are ten wells in the existing groundwater quality monitoring network, out of which six wells are screened in the Hueneme aquifer and three wells are screened in the Mugu aquifer.[243] Additionally, the GSA plans to monitor groundwater quality at two wells, which are screened in the fine-grained Pleistocene deposits, on a periodic basis to understand if the leakage from shallow groundwater can cause groundwater quality concerns in the principal aquifers.[244] The GSA considers the annual

[234] Mound GSP, Section 5.3, p. 193, Table 5.3.1, pp.378-379.
[235] Mound GSP, Table 5.3.1, pp.378-379.
[236] Mound GSP, Section 5.9, p. 214.
[237] Mound GSP, Section 5.3.1, p. 195.
[238] Mound GSP, Section 5.3.1, p. 195.
[239] Mound GSP, Section 5.4, p. 200.
[240] Mound GSP, Section 3.2.3, pp. 98-99.
[241] Mound GSP, Section 5.5, p. 203.
[242] Mound GSP, Section 5.5, p. 203.
[243] Mound GSP, Section 5.6, p. 206.
[244] Mound GSP, Section 5.6, p. 206.

sampling frequency to be adequate and proposes to increase the sampling frequency if unexpected changes in the water quality are observed.[245] The GSP states groundwater quality is monitored by local agencies and the GSA plans to leverage the groundwater quality data collected by these agencies. Groundwater quality data will be collected and analyzed for TDS, chloride, nitrate, sulfate, boron, and other common water quality parameters.[246]

The GSA plans to monitor land subsidence differently in the eastern and the western part of the Subbasin. For the eastern half of the Subbasin, the GSA plans to use InSAR data made available by the Department along with available GPS data.[247] The GSP states that the InSAR and the GPS data will be compared with groundwater level data to understand the subsidence rate and its relation to groundwater level or groundwater extraction rate.[248] The GSA considers the Department's InSAR data to be unreliable for land subsidence monitoring in the western half of the Subbasin.[249] For the western half of the Subbasin, the GSA plans to use groundwater elevations as a proxy to monitor the land subsidence caused by groundwater extraction.[250]

The GSP states that depletion of interconnected surface water is not applicable to Mound Subbasin; therefore, the GSA does not plan to monitor for the depletion of interconnected surface water.[251] Based on the approach determined by the GSA to address Recommended Corrective Action 5a, the GSA may need to establish a monitoring network for depletions of interconnected surface water.

The GSP states that because there is a relatively small amount of groundwater extraction occurring in the Subbasin and the principal aquifers are confined, the aquifers do not show large seasonal changes.[252] The GSP further states that long-term monitoring results show that measurable objectives have been met historically; therefore, high-frequency monitoring is not necessary to characterize short-term, seasonal, and long-term trends in groundwater levels, quality, and water budget components.[253] Quarterly groundwater level monitoring, semiannual extraction rate reporting, and annual groundwater quality sampling frequencies are considered adequate by the GSA.[254] The GSP states that more frequent monitoring is not considered necessary unless conditions change; however, the GSP does not specify under what conditions monitoring frequency will be changed and does not specifically discuss how monitoring network assessments and improvements will potentially include an adjustment of frequency or density during

[245] Mound GSP, Section 5.6.1, p. 208.
[246] Mound GSP, Table 5.6.01, p.381.
[247] Mound GSP, Section 5.7.2, p. 212.
[248] Mound GSP, Section 5.7.2, p. 212.
[249] Mound GSP, Section 5.7, p. 211.
[250] Mound GSP, Section 5.7, p. 211.
[251] Mound GSP, Section 5.8, p. 214.
[252] Mound GSP, Section 5.2.3, p.193.
[253] Mound GSP, Section 5.2.3, p.193.
[254] Mound GSP, Section 5.2.3, p.193.

GSP implementation. The GSA should outline in the GSP how monitoring density and frequency may be changed in the future due to minimum threshold exceedances, variable spatial or temporal conditions and/or adverse impacts to beneficial uses and users of groundwater.

Additionally, Department staff encourage the GSA add language to the GSP explicitly stating all groundwater monitoring data collected from the monitoring network will be submitted to the Department's SGMA Portal, GSP Monitoring Network Module, and add language to the GSP stating how quickly after data collection the information will be submitted to the Department. Department BMPs recommend data be submitted immediately after collection. [255]

The description of the monitoring network included in the Plan substantially complies with the requirements outlined in the GSP Regulations. While the GSA may consider changes to the monitoring network based on recommended corrective actions detailed in Section 5, at this time 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.

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. [256] 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. [257]

The GSP includes five projects or management actions to monitor the changing conditions in the Subbasin and to address potential groundwater quality problems. Projects/Management Action 1 and 2 are related to seawater intrusion monitoring and planning for any unanticipated seawater intrusion. Even though seawater intrusion is not a concern in the Subbasin, the GSA plans to install monitoring wells and develop a contingency plan to address any unforeseeable seawater intrusion. The GSP discusses the installation of cluster monitoring wells in three different locations, so that the data from these wells will enable the GSA to draw iso-concentration maps for chloride and to

[255] Department of Water Resources, 2016, Monitoring Networks and Identification of Data Gaps BMP.
[256] 23 CCR § 354.44 (a).
[257] 23 CCR § 354.44 (b) *et seq.*

monitor the landward migration of seawater,[258] installation for two sites is expected by 2027 and the third site by 2032.[259]

Projects/Management Action 3 is a proactive measure to avoid land subsidence related to groundwater level decline by developing a contingency plan in case the future conditions differ significantly from the condition in the projected water budget analysis and groundwater levels decline below the historical low.[260] Project/Management Action 4 is a measure to protect groundwater quality. The GSP states that poorly constructed and abandoned wells have caused groundwater quality problems in the Subbasin by creating conduits for migration of poor-quality groundwater from Shallow Alluvial Deposits into the principal aquifers.[261] The GSA plans to coordinate with the local well-permitting agency to identify and address the improperly constructed and abandoned wells as well as to review well permit ordinance and modify it, if necessary, to ensure the proper construction and abandonment of the wells in the future.[262] Project/Management Actions 3 and 4 are anticipated to be completed by the first periodic plan evaluation; however, the GSP states that since these are voluntary measures, they will be completed at the GSA's discretion.[263]

Project/Management Action 5 is a shallow groundwater monitoring program that will provide data to better understand the relationship between the Shallow Alluvial Deposits and Santa Clara River flows with the principal aquifers. The water level and quality data will be collected from the shallow wells located near the Santa Clara River for a five-year period leading up to the first periodic plan evaluation.[264] The GSP states that this monitoring will be conducted to support the GSP's conclusion that groundwater extraction does not impact surface flow.[265] If the data suggest a significant relationship exists between the Shallow Alluvial Deposits and Santa Clara River flows with the principal aquifers, the GSP will be updated to include those findings and adequate level of monitoring will be continued.[266]

The GSP describes the relevant measurable objectives for four projects/management actions and states that there is no relevant measurable objective for the interim shallow groundwater data collection and analysis program.[267] The GSP states that the implementation trigger for the seawater intrusion monitoring well project is the GSP Emergency Regulations Section 354.3(d) which requires GSAs to address data gaps

[258] Mound GSP, Section 6.3, p. 220.
[259] Mound GSP, Section 6.4, p. 223.
[260] Mound GSP, Section 6.4, pp. 223-224.
[261] Mound GSP, Section 6.5, p. 226.
[262] Mound GSP, Section 6.5, p. 226.
[263] Mound GSP, Section 6.4.5, p. 225.
[264] Mound GSP, Section 6.6, p. 229.
[265] Mound GSP, Section 6.6, p. 229.
[266] Mound GSP, Section 6.6, p. 229.
[267] Mound GSP, Section 6.6, pp. 216-232.

before the first periodic plan evaluation.[268] There are no implementation triggers identified for the remaining four projects/management actions because according to the GSP, the projects/management actions are voluntary measures, which will be implemented by the GSA at its discretion.[269] The GSP describes that permits or regulatory approvals are not required for the projects/management actions except for the seawater intrusion monitoring wells project. The GSP identifies the types of permits needed for monitoring well construction.

The GSP also states that it does not appear that overdraft has occurred historically in the Subbasin because no undesirable results have been reported historically. [270] Furthermore, the GSP states that sustainability can be achieved without the need for overdraft mitigation measures.[271] Although GSA's approach is to manage the Subbasin without implementing any overdraft mitigation measures, a comparison of the historical and projected water budgets shows that the overdraft will reduce from 431 acre-feet per year (average for 1986-2019) to 13 acre-feet per year (average for 2022-2041).[272] The GSP also states that groundwater production is expected to increase from 7,288 acre-feet per year (average for 1986-2019) to 7,882 acre-feet per year (average for 2022-2041).[273] The GSP does not explicitly discuss a new source of water in the project and management actions; however, the calculations of surface water inflows and outflows show that the imported surface water from Casitas Municipal Water District is expected to increase from 3,609 acre-feet per year (average for the water year 1986 to 2019) to 5,608 acre-feet per year (average for the water year 2022 to 2041 under baseline condition).[274] While Department staff understand that the expected availability of imported water provided in the GSP is based on the City of Ventura's 2020 Comprehensive Water Resources Report,[275] it is not clear to Department staff if the GSA intends to avoid undesirable results and implement the GSP under the assumption that the water supply portfolio will be expanded which will result in the availability of additional imported water and recommend that the GSP clarify and explain the increased water supply and if it contributes to the reduction of overdraft as discussed in Section 4.2.3.

Department staff conclude that the Plan describes proposed projects and management actions in a manner that is generally consistent and substantially complies with the GSP Regulations. The projects and management actions, which focus largely on filling the data gaps are directly related to the sustainable management criteria and present a generally feasible approach to achieving the sustainability goal of the Subbasin.

[268] Mound GSP, Section 6.6.2, pp. 217-218.
[269] Mound GSP, Section 6.6, pp. 217-231.
[270] Mound GSP, Section 3.3.4.1, p. 134.
[271] Mound GSP, Section 6.1, p. 216.
[272] Mound GSP, Table 3.3-03, pp. 349-350, Table 3.3-07, p. 365.
[273] Mound GSP, Table 3.3-03, p. 350, Table 3.3-07, p. 356.
[274] Mound GSP, Table 3.3-02, pp. 347-348, Table 3.3-06, p. 353.
[275] Mound GSP, Table 3.3-06, p. 355.

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."[276] 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.[277]

The following three Subbasins are adjacent to the Mound Subbasin: Lower Ventura River, Santa Paula, and Oxnard. The Lower Ventura River Subbasin is a very low-priority subbasin, which is not currently required to be managed under a GSP. The Santa Paula Subbasin is an adjudicated subbasin, located upgradient of the Mound Subbasin, which is not currently required to be managed under a GSP. The Oxnard Subbasin is a critically over drafted subbasin, located south of the Mound Subbasin, and is currently managed under a GSP. Oxnard and Mound are hydraulically connected, although the degree to which the faults between the subbasins inhibit subsurface flow is identified as a data gap. The Mound Subbasin GSP generally accounts for potential impacts to and from adjacent Subbasins when developing their water budget and sustainable management criteria.

Based on information available, Department staff have no reason to believe that groundwater management under the Plan in the Mound Subbasin will adversely affect the ability of local agencies in the adjacent basins to achieve sustainability at this time. Department staff will continue to review periodic evaluations to the Plan to assess whether implementation of the GSP is potentially impacting adjacent basins.

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.[278]

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.

[276] Water Code § 10733(c).
[277] 23 CCR § 354.28(b)(3).
[278] 23 CCR § 354.18.

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 Mound 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 Mound 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

Investigate the hydraulic connectivity of the Santa Clara River, the shallow alluvial deposits, and the principal aquifers. Estimate the quantity and timing of gains or losses of water to the groundwater systems associated with groundwater pumping and projects and management actions. Based on results of the investigation, provide an updated discussion of the potential for management of the principal aquifers to impact beneficial uses and users of groundwater, including surface water ecosystems and GDEs.

RECOMMENDED CORRECTIVE ACTION 2

Clarify if the projected water budgets consider the availability of sufficient surface water supply in the future and whether insufficient surface water supply would require more groundwater pumping which could result in undesirable results.

RECOMMENDED CORRECTIVE ACTION 3

Amend the quantitative definition of undesirable results (i.e. combination of minimum threshold exceedances) for degraded water quality to account for local or regional threshold exceedances or provide additional information to the GSP to support why undesirable results will not occur until minimum thresholds are exceeded in 100 percent of representative monitoring sites.

RECOMMENDED CORRECTIVE ACTION 4

Amend the quantitative definition of undesirable results (i.e. combination of minimum threshold exceedances) for the chronic lowering of groundwater levels to account for local threshold exceedances in the Coastal Area or provide additional information to support why undesirable results for subsidence will not occur in the Coastal Area until minimum

thresholds are exceeded in 50 percent of representative monitoring sites in either principal aquifer.

RECOMMENDED CORRECTIVE ACTION 5

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

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

a. Based on the results of Recommended Corrective Action 1, define the significant and unreasonable conditions that constitute undesirable results for depletions of interconnected surface water and monitor conditions in the Subbasin to verify that the defined undesirable results are not present and not likely to occur.[279]

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.

[279] 23 CCR § 354.26 (d).