Sonoma Valley Groundwater Subbasin Groundwater Sustainability Plan

First Periodic Evaluation

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DRAFT
FOR PUBLIC REVIEW

Prepared for

SONOMA VALLEY
GROUNDWATER
SUSTAINABILITY AGENCY

EXECUTIVE SUMMARY

The Sonoma Valley Subbasin's first Periodic Evaluation covers the evaluation cycle between Water Years (WY) 2021 and 2025, immediately following the Groundwater Sustainability Plan (GSP) adoption in December 2021. This evaluation summarizes and analyzes information and data collected over the past five years and assesses progress made in implementing the GSP.

Over the evaluation cycle, the Sonoma Valley Groundwater Sustainability Agency (GSA) made significant progress implementing the GSP through the collection of new information to support the understanding of the Subbasin; advancement of programs, projects, and management actions to progress sustainability; and expansion of groundwater awareness and engagement of groundwater users. Over the five-year evaluation cycle, the GSA has used the findings of this work to clarify and update information presented in the GSP and address Recommended Corrective Actions provided by the California Department of Water Resources (DWR). Key activities and findings described in this Periodic Evaluation are summarized below, along with applicable next steps.

The Periodic Evaluation Finds that the GSP should be Amended

This Periodic Evaluation demonstrates that there is the need to amend the GSP to address undesirable results within the Subbasin.

The Periodic Evaluation identifies the need to amend the GSP, primarily due to actions needed to address undesirable results which have occurred within the Subbasin related to the chronic lowering of groundwater levels and reduction of groundwater storage. Specific areas of the GSP which are anticipated to be updated or revised through the Plan Amendment include:

- Designation of the El Verano and Eastside Groundwater Sustainability Priority Areas (Priority Areas) as management areas within the Subbasin.
- Modifications to the approach to monitor for total dissolved solids for the Water Quality Monitoring Network.
- Potential modifications to sustainable management criteria (SMC) for seawater intrusion.
- Incorporation of a demand management plan and financial analysis resulting in reprioritization and focus for projects and management actions (PMAs).

Development of a Plan Amendment is underway and is expected to be submitted in spring of 2027.

Groundwater Level Declines Have Caused Undesirable Results

Chronic groundwater level declines measured within the El Verano and Eastside Priority Areas have caused undesirable results for the chronic lowering of groundwater levels and reduction of groundwater in storage.

The GSP establishes specific measurable criteria (sustainable management criteria or SMCs) that constitute sustainable groundwater conditions within the Subbasin. SMCs include measurable objectives which set the goal for desired groundwater conditions and minimum thresholds which represent indications of undesirable results. The GSA is required to manage the Subbasin to avoid undesirable results indicative of significant and unreasonable effects caused by groundwater conditions.

Groundwater Levels and Storage: Minimum thresholds were assessed at representative monitoring points (RMPs) for both the shallow and the deep aquifer systems. During this evaluation cycle, persistent minimum threshold exceedances within two areas of the deep aquifer system

(El Verano and Eastside Priority Areas) triggered undesirable results for the chronic lowering of groundwater levels beginning in Fall 2023. Undesirable results have not occurred within the shallow aquifer system. Since groundwater elevations are used as a proxy for evaluating changes in groundwater storage, undesirable results are also occurring for reduction of groundwater in storage. Review of well permitting data during the evaluation cycle indicates that permit applications for up to 12 replacement or supplemental wells within and near the Priority Areas were needed to address impacts to existing water wells likely caused by the groundwater-level declines.

As described below, the Subbasin did not experience undesirable results for any of the other four sustainability indicators.

Groundwater Quality: The SMCs for degraded water quality were developed based on a network of public water system supply wells regulated by the State Water Resources Control Board's Division of Drinking Water for three constituents of concern: nitrate, arsenic, and salinity (measured as total dissolved solids). Undesirable results for groundwater quality have not occurred in the Sonoma Valley Subbasin during the evaluation cycle. Additionally, evaluation of current conditions shows no minimum threshold exceedances during the evaluation cycle for nitrate, arsenic, or total dissolved solids.

Seawater Intrusion: The Subbasin is adjacent to the San Pablo Bay and interaction with saltwater occurs in the Baylands area as well as with the tidally influenced Sonoma Creek. There is no evidence to date of seawater intrusion occurring or impacting beneficial users of groundwater. The GSA reviewed seawater intrusion data collected during the evaluation cycle to assess current conditions relative to sustainability metrics. Available groundwater data continue to indicate that seawater intrusion is not occurring and that the SMC methodology established in the GSP remains applicable and is protective of beneficial uses and users of groundwater. New data collected during the evaluation cycle indicates that the location of the minimum threshold may need to be adjusted which will be incorporated into the upcoming Plan Amendment.

Interconnected Surface Water: Initial SMCs were established using groundwater levels as a proxy for interconnected surface water depletion using seven shallow monitoring wells. Overall, dry-season groundwater elevations were stable or increasing in most RMPs. To date, minimum threshold exceedances occurred in three wells during the 2021/2022 drought. Since then, groundwater levels at RMPs recovered and nearly all remained above measurable objectives. Levels constituting undesirable results have not occurred in the Subbasin during the evaluation cycle.

Land Subsidence: Land surface subsidence is measured with DWR-provided InSAR data. During this evaluation cycle, InSAR data show negligible increases and decreases in land surface elevation within the measurement error of +/- 0.1 foot in most areas of the Subbasin, which indicates that inelastic land subsidence attributable to groundwater pumping is not occurring.

With the exception of potential updates to the water quality and seawater intrusion SMC, other sustainable management criteria established within the GSP remain applicable and appropriate based on review of new information and data and no changes to the methodology or approach for setting SMC are deemed necessary at this time. The GSA will continue to evaluate the need to modify SMC as new information is made available, including DWR's forthcoming guidance on interconnected surface water depletion.

Refined Monitoring Networks Provide Robust Data Acquisition

Monitoring networks were improved and all critical monitoring network data gaps were filled with new well installations and voluntary monitoring programs.

Improvements to the groundwater level and seawater intrusion monitoring networks were achieved through construction of five new multi-level monitoring wells and leveraging private wells volunteered for monitoring through the GSA's Level Up! monitoring program. Three of the new multi-level monitoring wells were added to the shallow and deep aquifer system RMP networks for groundwater levels. The remaining two new multi-level monitoring wells will be added to the RMP networks once a sufficient amount of groundwater level measurements have been collected and analyzed.

Updates were made to the water quality monitoring network to reduce redundancies and better align monitoring frequencies for constituents of concern.

At this time, the RMP monitoring networks are determined to be adequate for the purpose of managing the Subbasin and implementing the GSP. The most critical groundwater level monitoring network spatial data gaps identified in the GSP have been addressed during the first five years of GSP implementation. Non-critical GSP-identified data gaps remain along the Subbasin boundaries, which will be addressed by strategically leveraging existing wells volunteered by partner agencies and private groundwater users through the voluntary groundwater level monitoring program (Level Up!).

New Information Collected and Analyzed Fills Data Gaps and Improves Understanding of Subbasin

New information collected and analyzed with DWR grant funding has filled other important data gaps identified in the GSP and improved the GSA's understanding of Subbasin conditions, including updates to Subbasin water budgets.

Substantial progress was achieved in filling the primary data gaps identified within the GSP. Key new information collected includes:

- Refinement of the water supply well inventory that was used to revise the well density mapping and evaluate potential impacts on beneficial users relative to groundwater level SMC.
- Improving the GSA's understanding of areas within the Subbasin experiencing or having the potential to be impacted by chronic lowering of groundwater levels through mapping of the Priority Areas.
- Improving the characterization and monitoring for interconnected surface water and groundwater-dependent ecosystems.
- Collection and evaluation of geophysical data, including airborne electromagnetic (AEM) surveys flown by DWR and ground-based surveys performed by the GSA to help refine geologic structure and improve other aspects of the hydrogeologic conceptual model.
- Conducting a voluntary seawater intrusion monitoring event, which included sampling 22 wells for chloride and TDS in October 2024 and January 2025.
- Developing and piloting a voluntary flow metering program (Flow Smart) and obtaining groundwater extraction information directly from groundwater users through the Groundwater User Information Data Exchange (GUIDE) platform to improve understanding of groundwater use within the Subbasin and support planning for water-use efficiency programs.

Groundwater Use Continues to Exceed the Sustainable Yield

Recent and current groundwater use exceeds the sustainable yield, and updates to the modeled water budgets show continued exceedances without the implementation of Projects and Management Actions.

Water use within the Subbasin during the evaluation cycle was generally consistent with recent water use patterns and trends. Estimates of annual groundwater extraction range from approximately 6,429 to 6,768 acre-feet per year (AFY), with higher levels of extraction occurring in drier years. Groundwater extraction exceeded the estimated sustainable yield for the Subbasin of 5,400 AFY during the evaluation cycle, which is defined as the quantity of groundwater that can be pumped on a long-term average annual basis without causing undesirable results.

The groundwater flow model for the Subbasin was improved through expansion of the active model domain into the contributing watershed areas of the Subbasin, and recalibration and incorporation of new information and data. Simulations performed using the model indicate ongoing declines in groundwater storage, which is estimated at -1,300 AFY during the current water budget period of 2018 through 2024, compared with -1,000 AFY during the full historical period of 1971 through 2024.

Future baseline projections (which assume no new projects or management actions) based on updated climate and land use projections indicate continued declines in groundwater storage, albeit at a lower rate of -800 AFY and ongoing undesirable results without implementing PMAs. Additional simulations evaluating the response to PMAs are ongoing and will be incorporated into the Plan Amendment.

Recommended Corrective Actions Were Addressed

DWR issued five recommended corrective actions (RCAs) in its January 2023 GSP approval letter that have been addressed or are in the process of being addressed pending forthcoming guidance from DWR.

The RCAs related to the water budget, chronic lowering of groundwater level SMC, interconnected surface water SMC, and groundwater level and quality monitoring networks. Table 1 summarizes each RCA and provides updates on their status and how they are being or have been addressed.

Table ES1. Summary of Recommended Corrective Actions with Status and Approach

1 - Groundwater Levels Undesirable Result Further information on emergency operations and extended drought impacts included in Undesirable Result definition	Provide further explanation and description related to what constitutes emergency operations and analyze the anticipated groundwater conditions that would lead to emergency operations and the potential effects on beneficial uses and users if conditions extend beyond the 4-year drought factor.	Emergency operations as defined in the GSP are intended to represent short-term events (i.e., earthquakes or wildfires) that may trigger temporary increases in groundwater pumping. Further information and explanation is provided in Section 3.1 of the Periodic Evaluation. The GSA considers this RCA addressed and no further action is required.

Table ES1. Summary of Recommended Corrective Actions with Status and Approach

Corrective Action Number - Topic	DWR Recommended Corrective Action	Status and Approach for Addressing Recommended Corrective Action
2 - Groundwater Levels Minimum Threshold Further information on protective criteria utilized in developing minimum thresholds	Disclose the total number of wells that may be impacted by the proposed minimum threshold and provide a description related to the spatial relationship of the potentially impacted wells and the representative monitoring points.	A well impact analysis was performed using recently updated information from the updated well inventory and RMP network. The well impact analysis assesses the number of supply wells that could potentially be impacted by minimum threshold exceedances and is described in Section 4.3.3 of the Periodic Evaluation. The GSA considers this RCA addressed and no further action is required.
3a - ISW SMC Elaborate on methodology used for initial SMC and identification of ISW	Elaborate on how the percentile-ranking in groundwater wells near the RMPs was developed and applied to the MTs. For future updates of SMC, explain how the measurements from the RMPs and future data gap filling efforts will be interpreted to modify the initial SMC.	Further information and explanation on how the percentile rankings were developed are provided in Section 3.3.1 of the Periodic Evaluation. The GSA is awaiting issuance of DWR's final Guidance for Managing ISW Depletion prior to considering and implementing changes to the methodology for refining the ISW SMC.
3b - ISW SMC Use forthcoming DWR guidance	Consider utilizing the ISW guidance, as appropriate, when issued by DWR to establish quantifiable SMC and management actions.	Upon release, the final Guidance for Managing ISW Depletion will serve as a reference for potential updates to the ISW SMC and inform the application of groundwater modeling tools used to simulate and manage ISW depletions.
3c - ISW SMC Fill data gaps	Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of ISW and define segments of interconnectivity and timing.	Substantial progress made in filling data gaps related to ISW and GDEs is provided in Section 3.3.3 of the Periodic Evaluation.
3d - ISW SMC Collaboration with beneficial users and resource agencies	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.	Engagement with an ISW/GDE practitioner work group composed of local, state, and federal regulatory agencies, and interested GDE and ISW practitioners to provide expertise to improve ISW and GDE characterization is described in Section 3.3.4 of the Periodic Evaluation.

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Corrective Action Number - Topic	DWR Recommended Corrective Action	Status and Approach for Addressing Recommended Corrective Action
4 - Degraded Water Quality Monitoring Network Additional details needed	Provide monitoring network map and information on monitoring site type and data collection frequency.	Compiled well-specific information maps of the monitoring networks are provided in Section 5.3 of the Periodic Evaluation.
5 - Monitoring Network Reconcile details provided with GSP regulations	Reconcile monitoring network details with GSP requirements and ensure well construction details are provided for each monitoring site.	A reconciliation between the details of the monitoring network with DWR's data and reporting standards is provided in Section 5. All updated details associated with the monitoring network have been added to the SGMA Portals Monitoring Network Module. The GSA considers this RCA addressed and no further action is required.

Focused Studies are Guiding and Prioritizing Implementation of Project and Management Actions

Progress has been made on projects and management actions (PMAs) through planning, pilot studies, and initial implementation.

Substantial progress in advancing the planning and implementation of projects and management actions was achieved during the evaluation cycle by the GSA. In response to the undesirable result conditions within the Subbasin and findings from an evaluation of the cost and benefit of PMAs, the GSA has focused its efforts on elevating the planning and implementation of demand management measures and recycled water supply expansion as the highest priority projects.

Progress made during the evaluation cycle related to demand management includes (1) developing and implementing a groundwater demand assessment and WUE pilot program; (2) evaluation of alternate water source projects; and (3) development of a Groundwater Demand Management Plan.

- Reducing groundwater use through voluntary WUE measures and practices was advanced through establishment of the Well Aware program and utilization of local partner organizations and agencies to connect with specific groundwater-user classes. Activities included performance of a parcel-scale groundwater demand assessment and performance of a pilot program which included: 1) outreach and education, 2) developing the Well Aware Toolkit, 3) consultations and leak checks, and 4) demonstration sites or case study recognition program.
- In coordination with VOMWD, the GSA evaluated the availability of imported surface water supplies and met with representatives of the Sonoma Golf Club to discuss opportunities to utilize available municipal supplies sourced from imported surface water supplies in lieu of groundwater extraction.
- In January 2026, the GSA initiated development of a groundwater demand management plan and economic analysis which will inform the design and evaluation of potential demand management measures and programs within the Subbasin. Based on initial discussions with groundwater users, recommended measures for achieving a voluntary 15-percent reduction in total groundwater use throughout the Subbasin are being proposed within the plan, along with

use of alternate water supplies in-lieu of groundwater. While implementation of these measures is initially planned to be on a voluntary basis, the project is also identifying specific metrics for groundwater conditions that would lead to the imposition of mandatory demand management actions and establishing a framework for implementing mandatory demand management measures should they be needed.

Since adoption of the GSP, the GSA has obtained planning funding through the SGM Implementation grant and partnered with the Sonoma Valley County Sanitation District (Sanitation District) in advancing the planning and design of expanding the recycled water delivery system within the Eastside Priority Area. The GSA and the Sanitation District performed outreach to prospective users within the project area, selected a proposed pipeline route, advanced the design to 30 percent, and completed CEQA-related findings for the proposed project. The GSA and Sanitation District also initiated preparation of grant funding requests for completing the design and constructing the project.

Findings from aquifer storage and recovery pilot studies and feasibility assessments performed by Valley of the Moon Water District reveal potential opportunities for offsetting groundwater extraction through increased utilization of imported surface water flows.

The GSA assessed policy and programs options within the authorities of the GSA and/or local land use agencies that support the sustainability goal for the Subbasin, which included stakeholder surveys and establishing a prioritized list of policies and programs for the GSA to consider.

Since submitting the GSP, the GSA has not implemented enforcement actions, but it has implemented various governance and policy actions in alignment with the GSP. These actions have improved the efficiency of the GSA, established a local independent funding source, and provided more information on groundwater use. The GSA also provided technical and policy input on the County of Sonoma Well Ordinance Update, which is not under SGMA but is related to SGMA implementation.

GSA Continues Robust Stakeholder Engagement and Inter-Agency Coordination

The GSA has continued to prioritize public engagement and agency collaboration to achieve long-term groundwater sustainability.

The GSA has continued to expand public education and create meaningful opportunities for stakeholders to better understand groundwater challenges and contribute to solutions. This outreach includes, but is not limited to, holding publicly noticed meetings, updating information on the GSA's website, maintaining and expanding the GSA's interested parties list, issuing quarterly newsletters, posting on social media, creating educational videos, sending direct mailings for sharing of key information, issuance of press releases, using survey tools and direct communication to capture stakeholder feedback, and utilizing partner agencies and organizations to support outreach to specific groundwater user classes. In addition, the GSA has actively partnered and coordinated with nearby GSAs, other local agencies, state agencies, federal agencies, and tribes, as needed. The GSA has also actively participated and provided input on numerous land-use and water-supply planning initiatives and plans.

Summary of Recommended Next Steps

Findings of this Periodic Evaluation will inform the prioritization and timeframe for the GSA's next steps in implementing the GSP.

Based on the findings of this Periodic Evaluation, the following next steps have been developed and grouped into general types of activities.

Monitoring and Evaluating Groundwater Conditions for Sustainability

- Establish SMC at the two new multi-level wells constructed in 2025 once a sufficient amount of groundwater-level measurements have been collected and analyzed.
- Coordinate with public water supply systems to optimize water quality monitoring network.
- Evaluate forthcoming ISW guidance and assess need for refinements to ISW monitoring and management approach.
- Strategically leverage the voluntary groundwater-level monitoring program (Level Up!) to fill any remaining or future gaps within the monitoring networks.
- Further evaluate the need to adjust the MT and MO for the seawater intrusion SMC based on recently collected data for the Plan Amendment.
- Develop a modified TDS monitoring approach for the water quality SMC for the Plan Amendment.

Filling Data and Information Gaps

- Maintain and further improve the water supply well inventory and continue monitoring for dry wells through focused investigation and outreach in the areas experiencing undesirable results.
- Analyze data from the Flow Smart program and consider the need and opportunities for future expansion.
- Further integrate recently collected data from the monitoring well drilling and construction and geophysical investigations into the hydrogeologic conceptual model.

Water Use and Water Budget Tracking

- Continue to improve estimates of key water budget terms within the Subbasin, including groundwater extraction and changes in storage.
- Continue to perform simulations of PMAs to support the refined PMA approach to be incorporated into the Plan Amendment.
- Continue to maintain and update model in preparation for any other additional scenarios, including scenarios needed to evaluate the ISW depletion SMC following issuance of DWR's ISW guidance, and in preparation for the next evaluation cycle.

Projects and Management Actions

- Complete and implement the Groundwater Demand Management Plan, including advancing the Well Aware program through existing outreach and engagement platforms, implementing a third-party voluntary groundwater use reporting program to quantify the outcomes of measures taken to implement the Groundwater Demand Management Plan.
- Continue meeting with representatives of the Sonoma Golf Club to discuss the process and schedule for utilizing imported surface water supplies (in-lieu of groundwater extraction) for golf course irrigation in future normal and wet water years.
- Collaborate with the Sanitation District to submit a grant application through the State Water Resource Control Board's Water Recycling Funding Program which would fund up to 35 percent of the recycled water expansion project. Evaluate funding sources to cover the local match needed to construct the recycled water expansion project.

- Coordinate with Valley of the Moon Water District and the City of Sonoma to implement aquifer storage and recovery operations within the Subbasin. Engage with Sonoma Water and its water supply contractors in evaluating opportunities and constraints associated with developing a regional water bank strategy.
- Continue to seek grant funding to plan and implement stormwater capture and recharge projects and evaluate studies and pilot programs performed in the neighboring Santa Rosa Plain and Petaluma Valley basins for relevance in Sonoma Valley.
- Continue engaging with farmer organizations and growers to develop groundwater sustainability practices and incentives which could be incorporated into existing farm plans and certification programs.
- Incorporate any substantial modifications to the GSP PMAs in the Plan Amendment.

Engagement with Stakeholders and Other Agencies

- Continue stakeholder and local agency outreach and engagement programs and explore opportunities for enhancement.
- Further engage key stakeholders including underrepresented communities, California Tribes, and small farmers by determining and conveying specific benefits of sustainable groundwater management to these users.

The next steps identified above form the basis for ongoing updates to the implementation plan for the GSP over the next five-year evaluation cycle (WY 2026 through WY 2030).

REVIEW THE FULL PERIODIC EVALUATION

The full Sonoma Valley Groundwater Subbasin Periodic Evaluation is available at the Sonoma Valley Subbasin website for review.

The report can be accessed here:

http://www.sonomavalleygroundwater.org/periodicevaluation