

EXECUTIVE SUMMARY

The Santa Rosa Plain Subbasin's (Subbasin) first Periodic Evaluation covers the evaluation cycle between Water Years 2021 and 2025, immediately following the adoption of the Groundwater Sustainability Plan (GSP) in December 2021. The Periodic Evaluation summarizes and analyzes information and data collected over the past five years and assesses the progress made with GSP implementation, in compliance with the Sustainable Groundwater Management Act. The Subbasin covers 80,000 acres and is designated by the California Department of Water Resources (DWR) as a medium-priority basin.

Over this five-year evaluation cycle, the Santa Rosa Plain 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 evaluation cycle, the GSA used the findings of this work to clarify and update information presented in the GSP and address Recommended Corrective Actions provided by DWR. Key activities and findings described in this Periodic Evaluation are summarized below, along with applicable next steps.

The GSP Remains an Appropriate Plan for Sustainable Groundwater Management

This Periodic Evaluation demonstrates that there is no need to revise sustainable management criteria, change projects, or update any other policy decisions made in the GSP.

The Periodic Evaluation concludes that the GSP does not necessitate a Plan Amendment at this time, as the GSP continues to be an appropriate guiding policy plan for achieving the Subbasin sustainability goal, defined in the GSP as:

The goal of this GSP is to adaptively and sustainably manage, protect, and enhance groundwater resources while allowing for reasonable and managed growth through:

- *Careful monitoring of groundwater conditions*
- *Close coordination and collaboration with other entities and regulatory agencies that have a stake or role in groundwater management in the Subbasin*
- *A diverse portfolio of projects and management actions that ensure clean and plentiful groundwater for future uses and users in an environmentally sound and equitable manner*

The need for any amendments to the GSP will continue to be evaluated throughout the implementation period of the GSP (2022 to 2042) and reported to DWR at a minimum frequency of every five years.

Groundwater Conditions Remain Stable

Review of groundwater data over the past five years indicates overall stable groundwater conditions, and no undesirable results have occurred relative to sustainable management criteria.

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.

Overall, groundwater conditions remained stable during the evaluation cycle, which included one of the more significant droughts on record (Water Year 2021) followed by four years of normal and above average rainfall.

As described below, the Subbasin did not experience undesirable results for any of the five applicable sustainability indicators in this first evaluation cycle.

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, fall groundwater elevations in both the shallow and deep aquifer system networks remained above their minimum thresholds each year and measurable objectives were achieved during the normal and wet years at up to 81 percent of the RMPs with available data. Groundwater elevations are used as a proxy for evaluating changes in groundwater storage. Since no minimum threshold exceedances or undesirable results of groundwater elevations were observed, groundwater storage is also stable.

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 Santa Rosa Plain Subbasin during the current evaluation cycle. Additionally, evaluation of current conditions show no minimum threshold exceedances during the evaluation cycle for nitrate, arsenic, or total dissolved solids.

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 only two wells during the 2021 drought year. Since then, groundwater levels at RMPs recovered and most 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.

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 becomes available, including DWR's forthcoming DWR guidance on interconnected surface water depletion.

Refined Monitoring Networks Provide Robust Data Acquisition

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

Improvements to the groundwater level monitoring networks were achieved through construction of six 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 three 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.

Improvements to the interconnected surface water monitoring network were achieved through construction of four new shallow monitoring wells near interconnected streams within the Subbasin. These four wells will be added to the interconnected surface water RMP monitoring network 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 groundwater level monitoring network spatial data gaps identified in the GSP have been addressed during this evaluation cycle with the exception of the northernmost data gap area in the deep aquifer system monitoring network. The GSA will work with partner agencies to identify potential inactive municipal wells in that area for incorporation into the monitoring network. This and any other data gaps identified in the future are planned to be addressed by strategically leveraging existing wells volunteered by partner agencies and private groundwater users through the Level Up! voluntary groundwater level monitoring program.

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, which was used to revise the well density mapping and evaluate potential impacts on beneficial users relative to the potential for future groundwater level declines.
- Additional characterization of interconnected surface water (ISW) and groundwater dependent ecosystems (GDEs) with newer datasets and through field evaluations to improve spatial and temporal understanding and enhance characterization and monitoring of ISW/GDE conditions in the Subbasin.
- Collection and evaluation of geophysical data, including Airborne Electromagnetic surveys flown by DWR and ground-based surveys performed by GSA to refine geologic structure and improve other aspects of the hydrogeologic conceptual model.
- Improved understanding of groundwater use within the Subbasin through development and implementation of the voluntary Flow Smart flow metering program and collection of groundwater extraction information directly from groundwater users through the Groundwater User Information Data Exchange (GUIDE) platform.
- Expanded groundwater level monitoring through development of the voluntary Level Up! groundwater level monitoring program, which has engaged 45 well owners within the Subbasin and included targeted outreach to groundwater users in GSP-identified data gap areas.

Current Groundwater Use within Sustainable Yield and Projected Future Use Sustained through Planned Projects and Management Actions

Recent and current groundwater use remains within the sustainable yield and updates to the modeled water budgets and simulated future groundwater levels indicate the existing framework of projects and management actions remains appropriate to address projected climate and land use changes.

Water use within the Subbasin during the current evaluation cycle was consistent with recent water use patterns and trends with estimates of annual groundwater extraction ranging from approximately 17,800 to 20,400 acre-feet per year (AFY) with higher levels of extraction occurring in drier years. Groundwater

extraction remained within the estimated sustainable yield for the Subbasin of 23,900 AFY, 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 recalibration and incorporation of new information and data. Simulations performed using the model indicate that historical declines in storage over the 42-year historical period (WY 1976 through 2018) of -900 AFY were partially offset by increases in storage of +300 AFY over the more current five-year period (WY 2019 through 2024).

Future baseline projections (no new projects or management actions) based on updated climate and land use projections indicate a potential continued long-term decline in storage of -900 AFY over the 50-year projected period (WY 2025 through 2075) and the occurrence of undesirable results for groundwater levels and groundwater storage.

Future projections with projects and management actions - consisting of implementing water-use efficiency programs, aquifer storage and recovery projects, and stormwater capture and recharge projects were simulated to confirm that this framework of projects and management actions remains appropriate to maintain sustainable conditions within the Subbasin. The results of these simulations indicate that implementation of a combination of these projects and management actions would successfully eliminate the potential future undesirable results simulated in the baseline scenario.

Recommended Corrective Actions Were Addressed

DWR issued six recommended corrective actions 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 recommended corrective actions 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 recommended corrective actions 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		
Corrective Action Number - Topic	DWR Recommended Corrective Action	Status and Approach for Addressing Recommended Corrective Action
1 - Water Budget	Include surface water imports to the Subbasin from the Russian River system in the historical and projected water budgets.	Information on Russian River imported surface water to the Subbasin was included in each of the Annual Reports surface water supply tables and is summarized in Section 6.4 of the Periodic Evaluation. The GSA considers this RCA addressed and no further action is required.
2 - GWL 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 3.2 of the Periodic Evaluation.

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		The GSA considers this RCA addressed and no further action is required.
3 - GWL 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.
4a - 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 3.4.1 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.
4b - 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.
4c - 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 3.4.3 of the Periodic Evaluation.
4d - 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 3.4.4 of the Periodic Evaluation.
5 - 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.

6 - 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.
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Project and Management Actions are on Track

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

Reducing groundwater use through voluntary water-use efficiency measures and practices was advanced through establishment of the Well Aware program and engagement 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 a case study recognition program.

Studies and pilot projects for stormwater capture and recharge and aquifer storage and recovery were performed within the Subbasin revealing potential opportunities for enhancing groundwater recharge and offsetting groundwater extraction through increased utilization of both imported and local wet-weather surface water flows.

The GSA assessed policy and program 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 efficiency of the GSA, established a local independent funding source, and provided more information on groundwater use. The GSA also provided technical and policy perspectives 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

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 commented 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 recently constructed monitoring wells once a sufficient amount of groundwater level measurements have been collected and analyzed.
- Coordinate with public water supply systems to optimize the water quality monitoring network.
- Evaluate forthcoming ISW guidance and assess need for refinements to ISW monitoring and management approaches.
- Strategically leverage voluntary groundwater level monitoring program (Level Up!) to fill any remaining or future gaps within the monitoring networks.

Filling Data and Information Gaps

- Maintain and further improve well inventory.
- Analyze data from Flow Smart program and consider need and opportunities for future program expansion.
- Further integration of 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 maintain and update model in preparation for any other additional scenarios, including any needed to evaluate the ISW depletion SMC following issuance of DWR's ISW guidance, and in preparation for the next Periodic Evaluation cycle.

Projects and Management Actions

- Continue advancing the water use efficiency program through existing outreach and engagement platforms and further evaluate the cost/benefit of the Well Aware program components to support the GSA's implementation planning and inform the prioritization specific actions and initiatives, including expanding outreach and engagement, establishing specific metrics and goals for the program, continuing and expanding regional partnerships.
- Evaluate the results of recently completed and ongoing stormwater capture and recharge and ASR pilot projects within the Subbasin to identify opportunities and constraints and inform the cost/benefit for full-scale implementation. Engage with Sonoma Water and its water supply contractors in evaluating opportunities and constraints associated with developing a regional water bank strategy.
- Assess opportunities for any future expansion or optimization of recycled water supplies within the Subbasin that offset groundwater extraction.

- 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.

Engagement with Stakeholders and Other Agencies

- Continue and explore opportunities for enhancing and optimizing the stakeholder and local agency outreach and engagement programs.
- 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).

TO REVIEW REPORT

The entire Santa Rosa Plain Groundwater Subbasin Periodic Evaluation is available at the Santa Rosa Plain Subbasin website for review.

The report can be accessed here:

<http://www.santarosaplaingroundwater.org/periodicevaluation>