DRAFT

Section 6: Projects and Management Actions

Groundwater Sustainability Plan
Santa Rosa Plain Groundwater Subbasin

Table of Contents

Table

Figures

6 PROJECTS AND MANAGEMENT ACTIONS

This section satisfies Sections 354.42 and 354.44 of the SGMA regulations, which require that GSPs include descriptions of projects and possible management actions that the GSA has determined will help achieve the sustainability goal as well as to respond to changing conditions in the basin over the 50-year planning horizon. Additionally, the GSP is required to include:

1. Which MO will benefit from a specific project or management action
2. Criteria and circumstances that would trigger implementation and future termination
3. The process by which the GSA will determine a project or management action is necessary to execute

Projects and management actions can be used to attain the MOs, meet interim milestones, and avoid MT exceedances and undesirable results.

The management actions and projects covered in this chapter outline a framework for achieving sustainability; however, many details must be negotiated before many of the projects and management actions can be implemented. The costs for management actions and project implementation are additional to the funding required to sustain the operation of the GSA, and the funding needed for monitoring and reporting. The collection of projects and management actions discussed in this section demonstrate that sufficient options exist to reach and maintain sustainability. Not all projects and actions have to be implemented to attain sustainability. Therefore, the projects and management actions included herein should be considered a list of options that will be refined during GSP implementation.

6.1 Identification of Projects and Management Actions

The identification of projects and management actions was an iterative process which included significant Advisory Committee and GSA Board input, and a substantial amount of staff work. Input received from the Advisory Committee and GSA Board helped refine and categorize the selection of projects and management actions into those that could be initially evaluated as part of this GSP, and those that require further assessment or study prior to implementation. For example, based on limitations and uncertainty related to the potential for future expansion of recycled water supplies, additional expansion of recycled water deliveries for irrigation supplies is not included with the projects evaluated using scenario modeling described in **Section 6.3**. Future opportunities for expansion and optimization of recycled water supplies with recycled water purveyors within the Subbasin will be evaluated as a management action during the first 5 years of GSP implementation. Additionally, other ideas for projects and actions raised by Advisory Committee and community members would need to be further developed and planned to evaluate with model scenarios. For example, recharge net-metering programs, water markets, and zero-net water use requirements for new development need further refinement. Management actions the GSA has under its authority, such as mandatory

conservation or pumping reductions, will also be studied and considered during the first 5 years of GSP implementation, as described in **Section 6.4**.

The projects and management actions considered for implementation and further planning build upon the successful historical groundwater management activities conducted within the Subbasin are listed below:

- Use of imported surface water by various municipalities (Sonoma Water's water contractors) in lieu of local groundwater supplies
- Development and use of recycled water supplies for meeting agricultural and landscape irrigation demands
- Implementation of water-use efficiency and conservation programs within the urban water-use sector
- Studies and implementation of water-use efficiency measures within the agricultural sector
- Studies and initial planning for managed aquifer recharge, including:
    - Feasibility study and initial planning for ASR
    - Studies, data collection, and pilot testing for stormwater recharge projects

While some of these initiatives and activities have historically been developed and planned specifically to address groundwater conditions within the Subbasin, many have been developed and implemented to achieve other benefits, objectives and purposes. Inclusion and further assessment of these initiatives and activities during implementation of the GSP will facilitate coordination and optimization of these initiatives and activities to support sustainable groundwater management. **Sections 6.2.** through **6.4** describe the identified projects, summarize initial assessment of projects using scenario modeling, and describe identified management actions.

6.2 Project Descriptions

To prevent potential undesirable results and to achieve MOs, a portfolio of projects has been developed and evaluated with the goal of addressing relevant sustainability indicators during GSP implementation. The GSA plans to immediately begin implementation of selected projects. In some cases, initial implementation steps include performing studies or analyses to refine the concepts into actionable projects. **Sections 6.2.1** through **6.2.4** provide descriptions of the projects, including information required by Section 354.44 of the GSP Regulations.

The projects described in this section were assembled into different groups for the purposes of performing an initial assessment of benefits using model scenarios:

- Group 1:
    - Water-Use Efficiency and Alternate Water Source Projects
- Group 2:
    - Stormwater Capture and Recharge
- Group 3:
    - ASR (existing municipal wells)

Applicable results from the model scenarios related to expected project benefits are included in project descriptions in **Section 6.2**, summary results are included **Section 6.3**, and details of the methodology and results of model scenarios are included as **Appendix 6-A**.

6.2.1 Water-Use Efficiency and Alternate Water Source Projects (Group 1)

The water-use efficiency and alternate water source projects include smaller-scale dispersed land-owner projects, such as turf removal, rainwater harvesting, and stormwater capture/reuse. These projects are initially planned as voluntary, incentive-based projects focused on groundwater users, primarily rural, residential, agricultural, and commercial/industrial groundwater users. The programs and education offered to rural domestic and commercial groundwater users will mirror programs offered to regional municipal water users, which have led to a 37 percent reduction in per capita water use since 2010. It is assumed that existing water-use efficiency by municipal groundwater users will continue through the Sonoma-Marin Saving Water Partnership. In addition to the Sonoma-Marin Saving Water Partnership, as described in **Section 2.6**, numerous regional and local water conservation programs are operational in the Plan Area including the LandSmart Program and the Sustainable Winegrowing Program. Many grape growers already use drip irrigation and rely on new technologies to determine when and how much to irrigate vines. This program would be focused on leveraging existing tools and BMPs and working with farmers who have not had either access to or the resources available to reduce water use. Examples of the tools and BMPs included in these programs are:

- Indoor (high-efficiency toilets, fixtures, and washers) and outdoor (landscaping assistance, surveys, and retrofits) water-use efficiency
- Conservation rebate programs for high-efficiency appliances and fixtures, landscape water budgets, landscape and irrigation design, and irrigation scheduling
- Stormwater management through low-impact development practices
- Rain water harvesting
- BMPs for conserving water use in commercial processing, including wineries

- Soil moisture monitoring and efficient irrigation scheduling

During the first year of GSP implementation, this project will include an assessment of the exact types of water-use efficiency tools and alternate water source projects that are expected to be most effective and feasible for Subbasin stakeholders, including groundwater-use characteristics, existing levels of conservation and water-use efficiency, and recommendations on preferred tools and strategies for implementation (such as incentive options). While implementation of these projects is initially planned to be on a voluntary basis, the assessment will also identify specific metrics for evaluating the benefits of the projects and assess Subbasin conditions that may lead to consideration of mandatory implementation of demand management actions.

6.2.1.1 Objectives, Circumstances and Timetable for Implementation

Objectives for implementing the water use efficiency and alternate water source projects are to help achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage and land subsidence sustainability indicators. Additionally, depending upon the locations within the Subbasin where Group 1 projects are implemented, benefits to the MOs for the depletion of interconnected surface water sustainability indicator may also be realized.

After a short planning period, it is assumed that water use efficiency and alternate water source project implementation will begin in 2023, while project benefits are assumed to begin in 2025 for the model scenarios. As described above, initial implementation will include an assessment of the exact types of water-use efficiency tools and alternate water source projects that are expected to be most effective and feasible for Subbasin stakeholders. The assessment will also evaluate specific metrics for evaluating the benefits of the projects and assess Subbasin conditions that may lead to mandatory implementation of demand management projects.

6.2.1.2 Expected Benefits

Initial evaluation of potential benefits of the water use efficiency and alternate water source projects were simulated under the Group 1 model scenario. For the purposes of estimating potential benefits of these projects, it was assumed that the Group 1 scenario simulates the impacts of a 20 percent reduction in all rural domestic use and a 10 percent reduction in consumptive use for all vineyards, both beginning in 2025. This assumption was considered to represent a reasonable level of groundwater use reduction based on the outcomes from existing BMPs and other water-use efficiency programs. Other groundwater-use sectors would be included in the project, including commercial, industrial, and other agricultural crops. However, for the purposes of conducting the scenario modeling, only reductions in rural domestic and vineyard groundwater use were applied, as these components were most readily able to be incorporated in the model.

Based on these assumptions and others further described in **Appendix 6-A**, benefits simulated include reduction in the number of potential future MT exceedances and elimination of potential undesirable results for the chronic lowering of groundwater levels, as well as decreasing the decline in groundwater storage. Benefits simulated by the model relative to the baseline scenario for the Group 1 scenario are summarized as follows:

- Simulated project yield: total of 1,800 AFY (1,200 AFY from reduction in agricultural consumptive use, 600 AFY reduction in rural domestic groundwater use)
- Simulated increase in groundwater levels: 5- to 15-foot increases, primarily in the deep aquifer system in the northern portions of the Subbasin
- Simulated increase in groundwater storage: 200 AFY
- Simulated net reduction in surface water depletion: 700 AFY

The planned initial assessment of water use efficiency and alternate water source projects will include recommendations for evaluating specific metrics for the actual benefits of the projects during implementation.

6.2.1.3 Public Noticing, Permitting and Regulatory Process

Public notice and outreach communications will be a critical component to the success of implementing water use efficiency and alternate water source projects, as these actions are initially planned as voluntary and will rely on Subbasin stakeholders clearly understanding their importance and benefits. Activities described in **Section 7.2.2** will include outreach to rural, residential, commercial, industrial, and agricultural stakeholders focused on highlighting the benefits of participation.

Some of the water use efficiency and alternate water source projects do not have any permitting or regulatory requirements. Any projects that may include permit or regulatory requirements, such as graywater systems, would need to comply with local requirements and ordinances.

6.2.1.4 Estimated Costs and Funding Plan

A total of $90,000 is included in the initial 5-year budget provided in **Section 7.2** to perform the assessment of water use efficiency and alternate water source projects and to fund initial rollout of voluntary measures. To continue and/or expand implementation of water use efficiency and alternate water source projects, the GSA will seek grant funding. The GSA is also planning to apply for funding of high-efficiency toilet replacement and agricultural BMP implementation through the State's 2021 Drought Relief Program.

6.2.1.5 Legal Authority

No legal authority is anticipated to be needed to voluntarily implement the water use efficiency and alternate water source projects.

6.2.2 Stormwater Capture and Recharge (Group 2)

As described in **Section 2.6**, planning for stormwater capture and recharge efforts, including site investigations and pilot studies, has been initiated by local agencies and growers within the Subbasin. Stormwater capture and recharge projects are intended to cover two general types of stormwater capture activities that have been identified in the Russian River Regional Storm Water Resource Plan (Russian River Watershed Association 2018). The first stormwater capture activity involves retaining and recharging onsite runoff. Examples of this type of activity include low-impact development and on-farm recharge of local runoff. The second stormwater capture activity involves recharge of unallocated storm flows. These actions require temporary diversions of storm flows from streams, and conveyance of those flows to recharge locations. State programs and grants (such as FLOOD-MAR, Proposition 68) and local entities (such as RCDs) can be used as resources to move forward on stormwater capture and recharge efforts.

Prior to implementing long-term stormwater capture and recharge programs, site-specific field investigations and assessments will be needed to identify suitable locations. Therefore, early stages of implementing stormwater capture and recharge projects are anticipated to include site-specific investigations and pilot studies of on-farm and other dispersed recharge opportunities that consider and include the following:

- Water available for recharge
- Areas with permeable near-surface soils
- Optimal methods and techniques
- Outreach to interested landowners with locations that could help sustain baseflows to streams and support GDEs

6.2.2.1 Objectives, Circumstances and Timetable for Implementation

Objectives for implementing the stormwater capture and recharge projects are primarily anticipated to help achieve MOs and avoid undesirable results for the depletion of interconnected surface water sustainability indicator. Depending upon the location of stormwater capture and recharge projects, and hydraulic connection between surficial recharge locations and the shallow aquifer system, there may be benefits to the chronic lowering of groundwater levels, groundwater storage and land subsidence sustainability indicators.

Stormwater capture and recharge projects require permitting, environmental analysis, and engineering design, which would begin in 2022. Depending upon results of pilot studies, planned to be initiated in 2024, full-scale implementation of stormwater capture and recharge projects is anticipated to begin in 2028. However, implementation of smaller-scale low-impact development type projects may proceed sooner, as permitting requirements are anticipated to be much less involved that projects that involve recharging diverted streamflows. The timing of projects is based on best estimates and may shift as GSP implementation proceeds, depending upon project needs at the time, permitting timelines, and resources available.

6.2.2.2 Expected Benefits

Expected benefits from implementation of stormwater capture and recharge projects are described in **Appendix 6-A**. Initial evaluation of potential benefits of the stormwater capture and recharge source projects were simulated under the Group 2 model scenario. For the purposes of estimating potential benefits of these projects, the following assumptions were made:

- The Group 2 scenario simulates the effects of stormwater capture and recharge on agricultural lands (On-Farm Recharge) along Mark West Creek, which was selected for initial modeling assessment based on generally favorable soil conditions and presence of GDEs, including critical species.
- The recharge locations were selected based on identifying simulated irrigated agricultural model cells principally downslope of the diversion location selected. There are 184 model cells, or 1,840 acres, that receive equal amounts of diverted water. This initial assessment of Mark West Creek will inform identification of other locations for stormwater capture and recharge projects within the Subbasin during implementation of this project.

The benefits simulated by the model relative to the baseline scenario for the Group 2 scenario are summarized as follows:

- Simulated project yield: 240 AFY of stormwater diverted and recharged
- Simulated increase in groundwater levels: only localized increases in the shallow aquifer system near the recharge areas
- Simulated increase in groundwater storage: 100 AFY
- Simulated net reduction in surface water depletion: 300 AFY, including a 10 percent increase in summertime flows along lower Mark West Creek

Benefits from stormwater capture and recharge projects would primarily be evaluated using changes in measured groundwater levels and surface water flows near and downstream of project locations.

6.2.2.3 Public Noticing, Permitting and Regulatory Process

Public outreach would be conducted to identify landowners interested in participating in stormwater capture and recharge projects. The degree of public noticing will vary depending upon the scale and type of recharge project.

Recharge of stormwater by retaining and recharging onsite runoff does not require permits. Recharge of unallocated storm flows is currently subject to the SWRCB's streamlined permit program for groundwater recharge by capturing high flow events. Recharge of unallocated storm flows will be subject to the terms of these five-year permits. Stormwater capture may also be subject to CEQA permitting. Additionally, stormwater management projects will need to

comply and coordinate with existing NPDES and MS4 permits for regional municipal stormwater systems.

6.2.2.4 Estimated Costs and Funding Plan

A total of $160,000 is included in the initial 5-year budget provided in **Section 7.2** to perform site-specific investigations and fund a pilot study. To continue and expand implementation of stormwater capture and recharge projects, the GSA will coordinate with other project proponents who may be pursing multi-benefit projects, consider providing additional funding in future years, and seek opportunities for grant funding.

6.2.2.5 Legal Authority

In addition to acquiring required permits and the right to divert stormwater, other legal authorities required to implement stormwater capture and recharge will depend upon the lead implementing agency for the projects. CWC Section 10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

6.2.3 Aquifer Storage and Recovery (Group 3)

As described in **Section 2.6**, regional planning for ASR and well-specific assessments have been performed by local agencies within the Subbasin (GEI Consultants Inc. et al. 2013 and City of Santa Rosa 2013c). Conceptually, an ASR program would involve the diversion and transmission of surplus Russian River water produced at existing drinking water production facilities during wet weather conditions (that is, the winter and spring seasons) for storage in the deep aquifer system of the Subbasin. The stored water would then be available for subsequent recovery and use during dry weather conditions (that is, the summer and fall seasons) or emergency situations. The Groundwater Banking Feasibility Study (GEI Consultants Inc. et al. 2013) provided an evaluation of the regional needs and benefits, source water availability and quality, regional hydrogeologic conditions, and alternatives for groundwater banking. Based on the findings from the study, pilot studies to further assess the technical feasibility of ASR as a method for groundwater banking were recommended and in 2018 a pilot project was completed in the nearby Sonoma Valley Subbasin (GEI et al. 2020).

The feasibility study also found that adequate water for a hypothetical 5,000 AFY groundwater recharge program would be available for diversion from Sonoma Water's diversion facilities along the Russian River more than 90 percent of the time. This divertible flow was calculated by simulating the river system operations to meet Sonoma Water demands, simulating Sonoma Water diversions, and then subtracting minimum flows needed to meet the Biological Opinion and other instream requirements. In general, water is expected to be available for groundwater recharge in most years during the months of December through May. Because of the high-flow rates in these winter and spring months (with 100 cfs or more divertible flow expected 90 percent of the time), this pattern of availability is expected to be present under higher future levels of demand. Some water would also be available for diversion to groundwater storage during June through November, though less frequently (GEI Consultants Inc. et al. 2013). An

updated assessment of water available for recharge will be performed during the early stages of GSP implementation.

Prior to implementing long-term ASR programs in the Santa Rosa Plain Subbasin, pilot studies are recommended to verify location specific feasibility, including aquifer capacity for recharge and recovery operations and geochemical compatibility. Pilot testing involves injecting potable drinking water into the Subbasin's aquifers and recovering it to assess injection and recovery capacities and monitor potential water quality impacts to native groundwater resources. Information generated by pilot test evaluations will help inform the degree to which ASR is a feasible strategy to improve the reliability water supply, along with helping to evaluate whether or not an ASR project can be developed and operated in a manner that will achieve both supply reliability and groundwater sustainability benefits. Therefore, early stages of implementing ASR projects are anticipated to include both site-specific investigations and pilot studies. Additionally, it is recommended that the 2013 Groundwater Banking Feasibility Study be updated to address current source water (Russian River) availability and transmission system capacity assumptions, perform an assessment of locations and operations that specifically benefit GSP implementation, and design and implement pilot studies for favorable areas.

Additionally, it is recognized that other water purveyors are pursuing initiation of ASR in the Subbasin on a more expedited timeframe in response to the 2020/2021 drought and associated funding opportunities. Specifically, Sonoma Water is developing plans to implement ASR at one of its production wells within the Santa Rosa Plain as part of its Santa Rosa Plain Drought Resiliency Project. The GSA will coordinate and provide support for planning and implementation of ASR projects that may be developed and implemented by Sonoma Water and other project proponents in response to current drought conditions.

6.2.3.1 Objectives, Circumstances and Timetable for Implementation

Objectives for implementing ASR projects are to help achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage and land subsidence sustainability indicators. Additionally, depending upon the locations within the Subbasin where ASR projects are implemented, benefits to the MOs for the depletion of interconnected surface water sustainability indicator may also be realized.

ASR projects require permitting, environmental analysis, and engineering design, which would begin in 2022. Depending upon results of pilot studies, planned to be initiated in 2024, full-scale implementation of ASR projects is anticipated to begin in 2028. The timing of projects is based on best estimates and may shift as GSP implementation proceeds based upon the needs at the time. As noted earlier, this timeframe may be further accelerated in response to the 2021/2022 drought.

6.2.3.2 Expected Benefits

Expected benefits from implementation of ASR projects include:

- Limiting the potential for chronic lowering of groundwater levels and undesirable results for other associated sustainability indicators.
- Enhanced reliability of the regional water supply during droughts, natural hazard events (such as, earthquakes), and periods of peak seasonal water demands.

For the purposes of assessing the effects, ASR was simulated in wells owned by Sonoma Water, City of Cotati, City of Rohnert Park, City of Santa Rosa, and Town of Windsor that have been initially assessed and deemed potentially feasible for ASR operations in previous studies (GEI Consultants Inc. et al. 2013 and City of Santa Rosa 2013c) Potential benefits from implementation of ASR projects based on the scenario modeling are described in **Appendix 6-A**. Based on the assumptions described in **Appendix 6-A**, benefits simulated include reduction in the number of potential future MT exceedances for the chronic lowering of groundwater levels, as well as decreasing the decline in groundwater storage. The following summarizes benefits simulated by the model relative to the baseline scenario for the Group 3 scenario:

- Simulated project yield: 940 AFY of stormwater diverted and recharged
- Simulated increase in groundwater levels: 5- to 10-foot increases over large areas of northern and southern portions of the Subbasin
- Simulated increase in groundwater storage: less than 100 AFY
- Simulated net reduction in surface water depletion: 300 AFY

Benefits from ASR projects would primarily be evaluated using changes in measured groundwater levels and improvements to groundwater storage changes.

6.2.3.3 Public Noticing, Permitting and Regulatory Process

Public notice for aspects of the ASR pilot projects will be carried out by the lead agency for each project. For ASR projects where the GSA is not the lead agency, the GSA will provide support for outreach activities to nearby well owners and the local community. For the full-scale ASR project, public notice is anticipated to occur through compliance with CEQA for any facilities or plans associated with the project. This includes the development of an underground storage supplement to permit the storage of water in the Subbasin that is required by the SWRCB, and through publicly noticed discussions of the proposed project at public meetings.

The SWRCB has recognized that it in the best interest of the state to develop a comprehensive regulatory approach for ASR projects, and has adopted general waste discharge requirements for ASR projects that inject drinking water into groundwater (Order No. 2012-0010-DWQ or ASR General Order). The ASR General Order provides a consistent statewide regulatory framework for authorizing both pilot ASR testing and permanent ASR projects. Pilot tests and any future

permanent ASR facility will be permitted under the ASR General Order. Oversight of these regulations is done through the RWQCBs and will require project proponents to comply with the monitoring and reporting requirements of the ASR General Order. Any additional permits required for the construction and operation of an ASR facility will be obtained by the lead agency for each ASR project as needed.

6.2.3.4 Estimated Costs and Funding Plan

Preliminary cost estimates to test, permit and construct project facilities for ASR is estimated to range from about $300,000 to $3,600,000 depending upon the complexity of each project with the lower cost estimates representing the use of existing wells that have the necessary monitoring infrastructure (GEI Consultants Inc. et al. 2013). The range of the costs also varies dependent upon whether existing facilities could be retrofitted or new facilities would need to be constructed. Preliminary costs will need to be further refined and provided upon completion of site-specific evaluation and pilot testing. The current plan for developing ASR in the Subbasin would utilize to the greatest extent possible existing infrastructure, meaning that new infrastructure would be greatly limited, thus allowing for earlier onset of both incremental drought supply and groundwater sustainability benefits.

A total of $150,000 is included in the initial 5-year budget provided in **Section 7.2** to contribute to an updated regional ASR feasibility study and to complete site-specific investigations of favorable areas. To continue and expand implementation of ASR projects, the GSA will coordinate with other project proponents who may be pursuing ASR projects, consider providing additional funding in future years, and will seek opportunities for grant funding.

6.2.3.5 Legal Authority

Local water supply agencies and the GSA have the authority to develop water supply projects, such as ASR for both water supply benefits and to provide groundwater sustainability benefits.

6.3 Evaluation of Projects Through Scenario Modeling

For the purposes of conducting initial evaluation of projects for this GSP, staff assembled conceptual projects and actions that are likely to be initiated within the first 5 years of implementation into two general categories:

- Those that have identified potential funding sources, or are voluntary or incentive-based with lower-costs (Group 1 projects). The Group 1 projects represent voluntary, incentive-based water-use efficiency and alternate water source projects focused on non-municipal groundwater users. Examples include smaller-scale dispersed land-owner projects, such as turf removal, rainwater harvesting, and irrigation efficiency practices. The exact types of these dispersed projects are not distinguished for the purposes of evaluating potential benefits using model scenarios.

- New or significantly expanded projects and actions that would require further studies and planning for implementation (Group 2 and 3 projects). Both Group 2 and Group 3 projects

represent managed aquifer recharge projects that aim to maintain or raise groundwater levels and improve summer and fall streamflows. The Group 2 projects represent stormwater capture and recharge projects that could specifically benefit streamflows within the Subbasin and help comply with the SMC for depletion of interconnected surface water. Group 3 projects represent ASR projects that can reduce municipal pumping of native groundwater, help address many sustainability indicators, primarily the chronic lowering of groundwater levels, and build drought-resiliency.

These two general categories formed the basis for model scenarios of potential projects. The model scenarios were performed as an initial evaluation of benefits of the Group 1-3 projects relative to the baseline 50-year projected scenario. **Table 6-1** summarizes the simulated yields expected for each group.

Table 6-1. Summary of Project Groupings and Yields

Project	Group 1	Group 2	Group 3
Reduce Crop Consumptive Use	Averages 1,200 AFY less agricultural pumping than baseline simulation	Same as Group 1	Same as Group 1
Reduce Rural Domestic Pumping	Averages 600 AFY less agricultural pumping than the baseline simulation	Same as Group 1	Same as Group 1
Stormwater Managed Aquifer Recharge	None	Average deliveries of 240 AFY	Same as Group 2
Aquifer Storage and Recovery	None	None	940 AFY

Approximate locations of the Group 2 and Group 3 projects are shown on **Figures 6-1** and **6-2**, respectively. The locations for Group 1 projects are distributed across the Subbasin. The methodology and results of the scenario modeling are described in **Appendix 6-A** and summary results of potential benefits are provided after the figures.

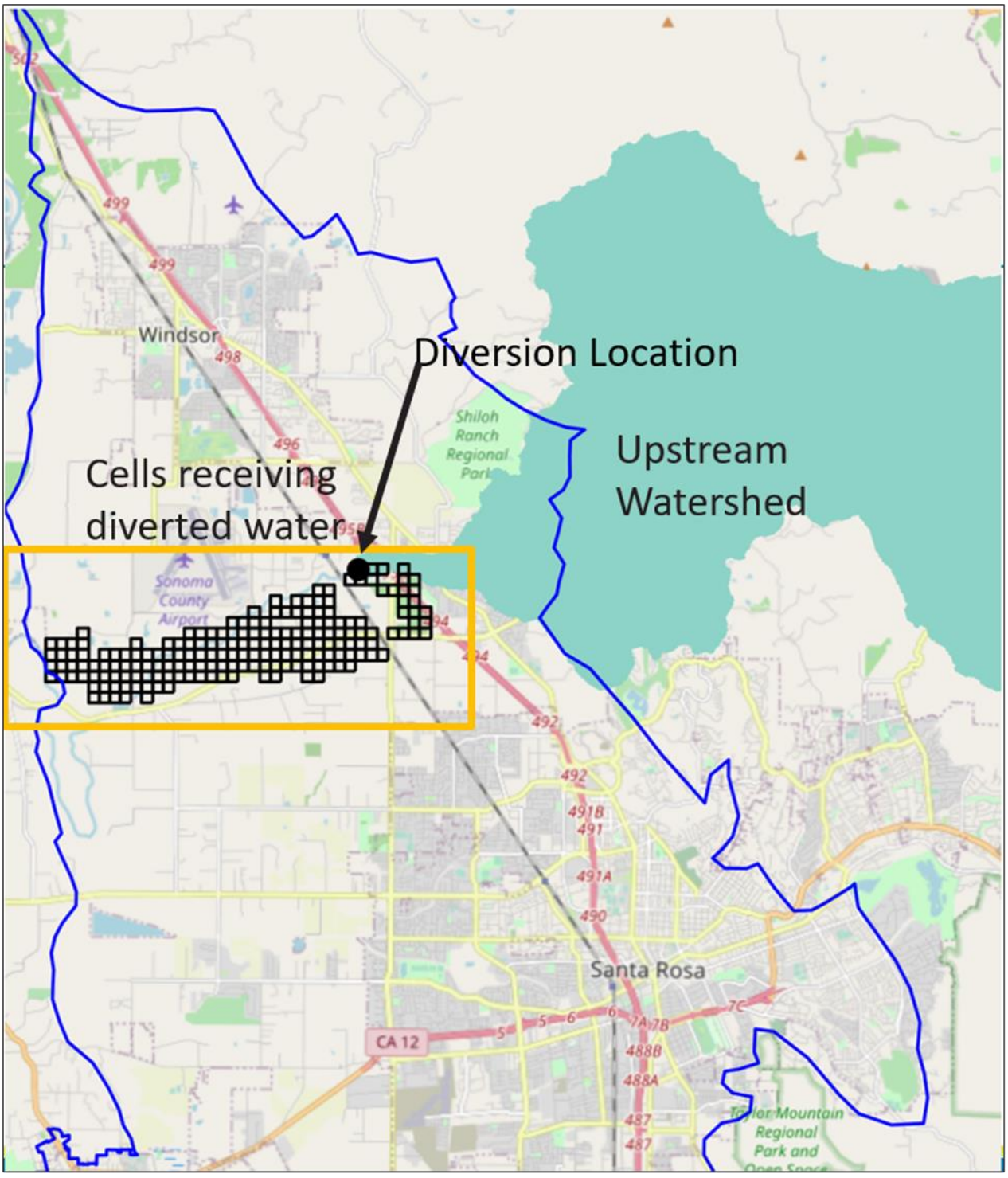

Figure 6-1. Locations of Simulated Stormwater Capture and Recharge Projects

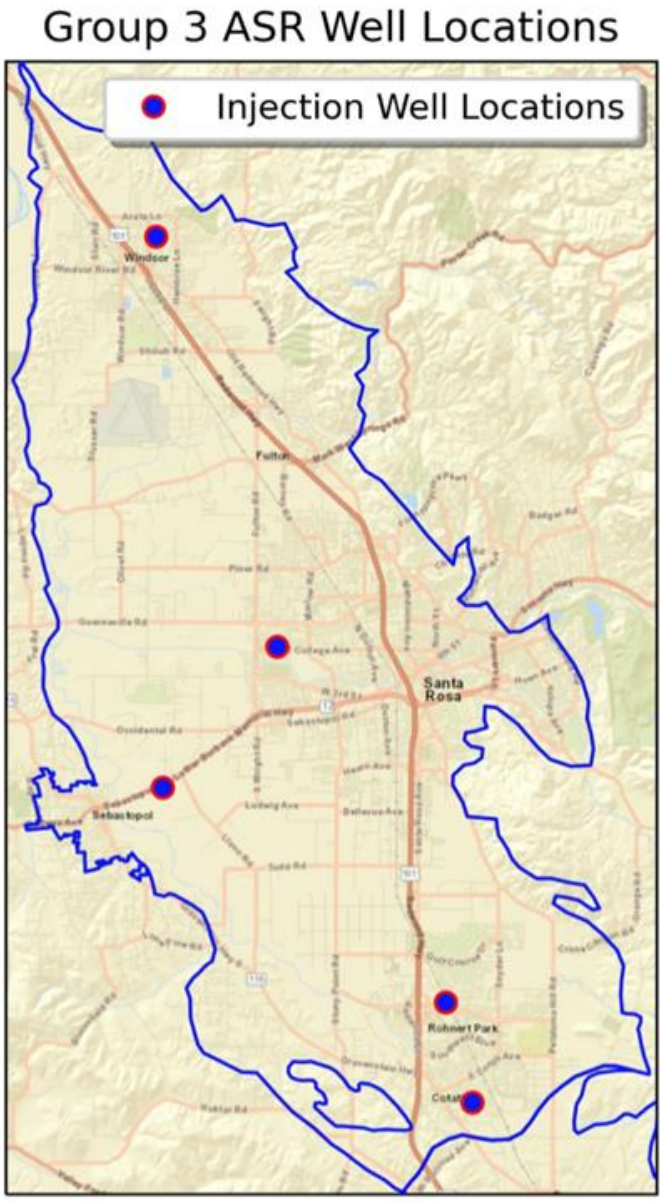

Figure 6-2. Locations of Simulated ASR Projects

General findings from the model scenarios indicate the following:

- **Groundwater Levels**: In the baseline scenario, groundwater levels in the shallow and deep aquifers remain above MTs for the first 20-year period. Groundwater levels generally fall below MTs in the last 11 years of the 50-year projected baseline water budget, primarily in RMPs in the deeper aquifer, potentially leading to undesirable results. The cumulative projects remove all occurrences of undesirable results by decreasing MT exceedances in RMP wells from 66 to 18. Implementation of Group 1 results in greatest decline in MT exceedances in RMP wells and eliminates potential undesirable results that are simulated to occur during the baseline 50-year projection.

- **Groundwater storage:** Groundwater in storage under a baseline scenario without projects is estimated to decline by an average of 200 AFY between 2021-2040 and 1,400 AFY over the entire 50-year projection period that includes a simulated extreme 20-year drought between 2050 and 2070. Cumulative projects are simulated to increase the amount of groundwater in storage by 400 AFY between 2021 -2040 (resulting in an average 200 AFY storage increase) and reduce the average decline by 300 AFY over the entire 50-year projection (resulting in an average 1,100 AFY storage decline).

- **Stream-Aquifer Interaction:** Higher groundwater levels near streams can better support streamflow, particularly in the summer and fall months. The addition of the Group 2 projects increases simulated summer streamflow by 10 percent in Mark West Creek.

Project scenarios help limit groundwater declines during the latter portion of the projected period (affected by the major drought). Although MT exceedances are not completely avoided during this more extreme dry period under these scenarios, the exceedances during severe droughts are not representative of undesirable results unless groundwater levels do not recover during subsequent wetter time periods.

Considering current uncertainties due to modeling, data gaps, and project information, these project scenarios provide a pathway for reaching sustainability and preparing for future changed conditions in the Subbasin to meet GSP requirements. Additional data collection and project conceptualization during early phases of GSP implementation will help refine these scenarios and allow for consideration of additional scenarios, including additional demand management actions, if necessary to achieve sustainability. The projects will also be supplemented by the following planned management actions, which include an assessment and prioritization of policy options that include demand management actions for the GSA Board to consider.

6.4 Management Actions and Projects Requiring Additional Assessment

In addition to initiating the projects described above, the GSA will further assess the following management actions and potential future projects that require additional assessment and planning:

- Coordination of Farm Plans with GSP implementation
- Assessment of additional recycled water opportunities
- Assessment and prioritization of potential policy options

Additionally, as provided by SGMA, should the above-described projects and management actions not be sufficient to eliminate undesirable results during implementation of the GSP, the GSA has authorities to limit groundwater pumping. **Section 6.4.3** further describes these authorities and potential situations where they may be considered.

6.4.1 Coordination of Farm Plans with GSP Implementation

Farm Plans are voluntary plans developed by third party organizations in collaboration with individual landowners that identify best management practices and provide site-specific actions to mitigate issues like sediment runoff or to improve water quality. In some areas of California, regulatory fees are reduced for landowners with Farm Plans that are certified by agreed-upon third parties. Currently, most Farm Plans do not include aspects of groundwater management that would directly support the GSA's efforts to comply with the requirements of the SGMA.

This management action involves a collaboration between the three Sonoma County GSA's and interested members of the agricultural community to evaluate the feasibility of developing a program that coordinates Farm Plans, developed at individual farm sites, with the implementation of the basin-wide GSP. This effort will identify areas of mutual interest (e.g., improved water use efficiency, increased groundwater recharge, increased monitoring and data collection, coordinated information sharing, and reporting) in addition to challenges that need to be addressed (e.g., data confidentiality, data quality requirements, verification of Farm Plan performance).

6.4.1.1 Objectives, Circumstances and Timetable for Implementation

Objectives of the management action include:

- Strengthening partnerships and coordination between the GSA and growers
- Identifying requirements or standards that need to be met to demonstrate that the implementation of the Farm Plan contributes to compliance with SGMA
- Developing metrics that will be measured and verified during implementation of the Farm Plan
- Considering options for Farm Plan sites to receive a form of credit for the contributions of the subject farm to the compliance with SGMA.

Coordination activities will begin in the first year of GSP implementation and it is anticipated that within 1 year of funding approval, staff would submit a report to the GSA Board with recommendations on the viability of such a program and next steps, as appropriate.

6.4.1.2 Expected Benefits

Expected benefits would include information sharing and coordination between the GSA and growers within the Subbasin. Other benefits will depend upon the outcome of the coordination activities and identification of mutual areas of interest to incorporate into Farm Plans. Potential areas of benefit include improvements to the GSAs monitoring network, filling key data gap areas, and advancing projects (such as water-use efficiency or recharge projects) that support the sustainability goal and avoid undesirable results to sustainability indicators.

6.4.1.3 Public Noticing, Permitting and Regulatory Process

Public notice of actions and outcomes from the coordination process would be provided at the GSA's regular Board and Advisory Committee meetings. The permitting and regulatory process would depend upon the outcome of the coordination and identification of mutual areas of interest to include within the Farm Plans.

6.4.1.4 Estimated Costs and Funding Plan

A total of $40,000 is included in the initial 5-year budget provided in **Section 7.2** for developing and beginning implementation of the work plan. It is assumed that costs for portions of the study will be shared with the Petaluma Valley and Sonoma Valley GSAs.

6.4.1.5 Legal Authority

Any needed legal authorities would depend upon the outcome of the coordination and identification of mutual areas of interest to include within the Farm Plans.

6.4.2 Assessment of Additional Recycled Water Opportunities

The use of recycled water for agricultural and landscape irrigation within the Subbasin has provided substantial benefits to groundwater conditions. During the current water budget period, it is estimated that approximately 10,000 AFY of recycled water is delivered within the Subbasin for agricultural and landscape irrigation, significantly reducing the need for use of groundwater and other potable water supplies. As described in **Section 6.1**, based on limitations and uncertainty related to the potential for future expansion of recycled water supplies, additional expansion of recycled water deliveries for irrigation supplies was not included with the projects evaluated using scenario modeling.

This project involves a collaboration between the GSA and City of Santa Rosa and participating cities for the Santa Rosa Water Reuse System, Town of Windsor, and Sonoma Water for the Airport/Larkfield/Wikiup Sanitation Zone to perform an assessment of additional recycled water opportunities. It is anticipated that the assessment will include:

- Evaluation of existing and future availability, delivery commitments, and constraints
- Assessment of options to optimize existing and projected future supplies
- Analysis of preliminary costs and benefits for future options

6.4.2.1 Objectives, Circumstances and Timetable for Implementation

Objectives for expanding recycled water deliveries are to help achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage and land subsidence sustainability indicators. Additionally, depending upon the locations within the Subbasin where recycled water projects are expanded, benefits to the MOs for the depletion of interconnected surface water sustainability indicator may also be realized.

It is assumed that the assessment will begin within the first 2 years of GSP implementation.

6.4.2.2 Expected Benefits

Potential benefits from implementation of expanding and maximizing the efficiency of recycled use is anticipated to include a reduction in groundwater pumping and localized increases in groundwater levels. Benefits from recycled water projects would primarily be evaluated using changes in measured groundwater levels and improvements to groundwater storage changes through implementation of the monitoring activities described in **Section 5**.

6.4.2.3 Public Noticing, Permitting and Regulatory Process

Public notice of actions and outcomes from the assessment would be provided at the GSA's regular Board and Advisory Committee meetings. While the permitting and regulatory process would depend upon the outcome of the assessment, each of the water recyclers within the Subbasin currently complies with all applicable permitting and regulatory requirements associated with recycled water use.

6.4.2.4 Estimated Costs and Funding Plan

A total of $30,000 is included in the initial 5-year budget provided in **Section 7.2** for the GSA to coordinate with recycled water purveyors to perform the necessary assessment.

6.4.2.5 Legal Authority

Each individual water recycler within the Subbasin owns its recycled water and has the legal authority to sell its recycled water in alignment with its policies. CWC Section 10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

6.4.3 Assessment of Potential Policy Options for GSA Consideration

SGMA provides several authorities to GSAs, which can be used to achieve groundwater sustainability and requires coordination between GSAs and land use agencies. This management action involves a collaboration between the GSA Board, local land use agencies, GSA member agencies, and stakeholders to assess future policy options that may be appropriate for the GSA to consider adopting or recommending for adoption by other agencies. This study will prepare a prioritized list of potential policy options, including stronger demand management actions that may need to be adopted should the projects described above not be implementable or successful. Based on input from the Advisory Committee and GSA Board, the following initial list of policy options has been developed for potential inclusion in the assessment:

- Water conservation plan requirements for new development.
- Discretionary review of well permits for any special areas identified in GSP
- Low-impact development or water efficient landscape plan requirements expansion

- Well construction and permitting recommendations (for example, water quality sampling and reporting for COCs, requirement for water-level measurement access, and procedures for preventing cross-screening of multiple aquifers)
- Well metering program
- Study of water markets
- Permitting and accounting of water hauling

6.4.3.1 Objectives, Circumstances and Timetable for Implementation

The objectives for this management action are to develop, prioritize, and vet potential policy options that may be needed to supplement or replace the projects. As the timeframe for conducting the community outreach, studies, and procedural requirements for adopting policy options can be lengthy, the assessment and prioritization will be initiated in the first year of GSP implementation. The circumstances and timetable for adopting and implementing any of the recommended policy options will be based on ongoing monitoring of groundwater conditions and progress of project implementation. Policy options that focus on demand management would be applied in the case of a situation where planned projects and management actions are determined to be insufficient to reach and/or maintain sustainability and undesirable results are occurring and are not projected to be eliminated by 2040 using other available projects and management actions.

6.4.3.2 Expected Benefits

Specific expected benefits for this management action will depend upon the type and scope of any policy options that are recommended and adopted by the GSA Board and/or partner agencies. However, the types of policy options considered and recommended will be those that focus on avoiding undesirable results and achieving the sustainability goal.

6.4.3.3 Public Noticing, Permitting and Regulatory Process

Public noticing will be a key aspect of implementing this management action, as considerable engagement with stakeholders will be needed to assess potential benefits and impacts to current and future groundwater users. Any policy options that result in limitations or curtailments of groundwater users would be conducted in an open and transparent process. The permitting and regulatory process associated with this management option will also depend upon the type of policy options under consideration.

6.4.3.4 Estimated Costs and Funding Plan

A total of $75,000 is included in the initial five-year budget provided in **Section 7.2** for the GSA to perform the assessment and initiate implementing recommendations. The total cost associated with implementing the management action will depend upon the type and scope of any policy actions considered for implementation.

6.4.3.5 Legal Authority

The legal authorities required for implementing any policy options will depend upon the type of policy options being considered. For policy options which include mandatory reductions or limitations on groundwater use, CWC Section 10726.4(a)(2) provides GSAs the authorities to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate. Legal authorities for policy options which involve land use policy changes are retained by the County and City of Sonoma. Similarly, for any policy options related to well permitting, the legal authorities reside with the county.