

Project Summary

This proposal is for a single project to develop a Groundwater Sustainability Plan (GSP) for the entire Santa Rosa Plain Groundwater Subbasin (Basin), which is designated as medium priority basin number 1-55.01 in California Department of Water Resources (DWR) Bulletin No. 118. The GSP will be developed through a transparent and public process based on the best available science and information such that it can be adopted by the Santa Rosa Plain Groundwater Sustainability Agency (GSA) and submitted to the State on or before January 31, 2022. Objectives of the proposed project include developing a GSP that:

- Meets requirements of the Sustainable Groundwater Management Act (SGMA) and DWR's adopted Groundwater Sustainability Plan Emergency Regulations (GSP Regulations) by establishing criteria and management actions that will achieve and maintain sustainable groundwater conditions in the Basin;
- Incorporates the best available scientific and technical information established through previous technical studies and voluntary groundwater management activities;
- Establishes a governance structure that provides opportunity for significant public and community engagement and integrates the perspectives and addresses the needs of the many diverse users and uses of groundwater resources within the Basin;
- Leverages the limited available funding and local resources through continued regional coordination and information sharing with other local GSAs.

To accomplish the above objectives, the project is comprised of four primary tasks consisting of: **(1) Formation of GSA and Establishment of Governance Structure; (2) Public Outreach/Community Engagement; (3) GSP Development; and (4) Project Management and Grant Administration.** The work activities proposed in Task 3 to prepare the GSP constitute the most substantial component of the project and have been divided into seven major phases of development:

- (I) Prepare and Submit Initial Notification of GSP Preparation;
- (II) Define Plan Area and Basin Setting;
- (III) Develop Sustainable Management Criteria;
- (IV) Design Sustainability Progress Monitoring Program;
- (V) Identify and Evaluate Proposed Project and Management Actions;
- (VI) Develop GSP Implementation Program, Costs, Detailed Schedule, and Reporting
- (VII) Compile Complete GSP for Adoption by GSA.

Development of the GSP will be a collaborative and iterative process that builds upon existing technical and policy information, including a voluntary groundwater management plan developed for the Santa Rosa Plain watershed in 2014. The process will incorporate input from the GSA Board, the GSA Advisory Committee, GSA Member Agencies and the public. Preparation of the GSP will have a robust public outreach component to encourage involvement and integrate input from the community.

The development of the GSP will be closely coordinated with neighboring GSAs in Petaluma and Sonoma Valleys, as well as local agencies with land use responsibilities including the Cities of Cotati, Rohnert Park, Santa Rosa and Sebastopol, Town of Windsor and the County of Sonoma, as further described in Section 3.0 of this Project Justification. Basin stakeholders have a history of collaborative groundwater management and water resource planning and have made substantial commitments to complying with SGMA. In addition to the aforementioned technical studies and voluntary groundwater management planning activities, local stakeholders have proactively coordinated to negotiate the formation of single GSA covering the entire Basin and the GSA has formed an Advisory Committee to reflect and solicit input from the diverse groundwater users in the Basin, which will have a key role in preparing the GSP. These foundational efforts will allow the GSA to move forward efficiently and swiftly in meeting the next required step in SGMA compliance.

Technical Need

The Santa Rosa Plain is a distinctive, ecologically and economically important hydrologic area of Northern California. Many of its finest attributes and assets are directly related to its water resources, which includes strong reliance on groundwater to meet demands. Trends in water use, land use, population growth, and climate change indicate that the region's water resources will come under increasing stress in the future, requiring careful and thoughtful monitoring and management. The Basin has been the subject of technical studies and voluntary groundwater management programs that provide a strong technical and institutional foundation to build upon under SGMA. The USGS completed studies and modeling of the basin in 2014, and basin stakeholders completed a voluntary Groundwater Management Plan (GMP) that same year. Key information, tools and outcomes from these previous groundwater management planning activities include:

- Technical information on the Basin hydrology, hydrogeologic framework, water chemistry, and groundwater levels, including historical trends.
- Development of a fully coupled computer model of surface water and groundwater systems in the Basin and contributing watershed area using the GSFLOW model from the USGS. The model has been used to simulate the water budget for the Basin and run preliminary future scenarios that will be needed for the GSP.
- Engagement of local stakeholders in local groundwater planning and management.

While a strong foundation of technical information and stakeholder involvement has been developed in the Basin, significant work will be needed to address data gaps, meet the new technical requirements of SGMA and the GSP Regulations and inform and engage community members and stakeholders on the GSP development process. Primary technical needs, data gaps and areas of substantial GSP requirements include:

- Transitioning from a voluntary groundwater management plan to a new sustainability plan with regulatory authority will require extensive public outreach and education. **This will be addressed through implementation of a comprehensive community engagement program, as described in Task 2 in the Work Plan.**
- More information is needed to address potential depletion of interconnected surface water and impacts to groundwater-dependent ecosystems from groundwater pumping; this will be challenging given the strong interconnection between surface water and groundwater in the Basin and the many related policies, regulatory programs and diverse interests, including a Biological Opinion and the presence of priority watersheds for salmonid species. **This need will be addressed by further assessing interconnected surface water and groundwater dependent ecosystems using local and State-sponsored tools, such as statewide mapping by The Nature Conservancy, Sonoma County LIDAR and vegetation mapping datasets and the integrated hydrologic model for the Basin, as described in Phases II, III and IV of Task 3 in the Work Plan**
- Improved water use estimates are needed for rural groundwater users (rural domestic and agriculture), which comprise an estimated 80% of the total groundwater use in the Basin. **This technical need will be addressed in Phase II, Task 3 in the Work Plan by refining water use estimates from ongoing modeling being conducted by the USGS and comparing with water use reported to the State Water Resources Control Board by well owners in a portion of the Basin.**
- Modeling of regulatory compliant future projected conditions that simulate the impacts of climate change, land use changes, hydrology, and changes in demands. **Use of the integrated model underpins much of the analyses described in Phases II, III, and V of Task 3 of the Work Plan.**
- Depth-dependent water level and water quality data are needed to improve understanding of the hydrogeology and better define the deep aquifer and the relationships and flow paths between the shallow and deeper aquifer systems. **Further evaluation of depth-dependent data will be conducted through the process of designing the monitoring program, as described in Phase IV, Task 3 of the Work Plan.**
- Identifying undesirable results as defined in SGMA and establishing quantifiable thresholds and interim milestones for sustainable management criteria. **An iterative process with extensive stakeholder and community input has been developed for this need, as described in Phase III, Task 3 of the Work Plan.**

Continued State funding and support will be critical to the success of the recently formed Santa Rosa Plain GSA and local stakeholders to meet the challenge of developing a technically sound and politically durable GSP, with limited local funding and resources, while also addressing the catastrophic aftermath of the most destructive wildfires in the history of the State of California.

Project Support

GSA Coordination

The development of the GSP will be closely coordinated with neighboring GSAs in Petaluma and Sonoma Valleys, as well as local agencies with land use responsibilities including the Cities of Cotati, Rohnert Park, Santa Rosa and Sebastopol, Town of Windsor and the County of Sonoma. In addition to closely coordinating on managing and monitoring along shared basin boundaries, resources will be leveraged and shared by the three GSAs in Sonoma County to maximize efficiencies, including shared templates and methodologies for certain GSP components, outreach resources, grant opportunities, and the development of data management system tools and technologies.

The coordination with neighboring GSAs and land use agencies will be facilitated through the following: (1) each of the local agencies with land use responsibilities in the Basin are either members of the GSA and are represented on the GSA Board or serve on the GSA Advisory Committee; (2) several members of the Santa Rosa Plain GSA (County of Sonoma, Sonoma County Water Agency, and Sonoma Resource Conservation District) are also members and represented on the Boards of the two neighboring GSAs in Petaluma and Sonoma Valleys; (3) the Sonoma County Water Agency is providing technical, grant management and outreach services to all three GSAs in Sonoma County through service agreements; and (4) administrators from each of three GSAs meet regularly with Water Agency staff to coordinate activities.

Documentation for the coordination includes the shared website set up for the three GSAs (sonomacountygroundwater.org), the Water Agency Service Agreements with each GSA, meeting agendas from regional coordination meetings of the administrators and Water Agency staff.

Communication with Beneficial Users of Groundwater

SGMA requires the GSA to consider the interests of all beneficial uses and users of groundwater, and encourage involvement of diverse social, cultural, and economic elements of the population within the Basin during GSP preparation and implementation. In recognition of this considerable activities were conducted during the initial task of GSA formation, as further detailed under Task 1 of the Work Plan:

- Conducting a Stakeholder Assessment Report on Implementing SGMA in Sonoma County;
- Developing a communications plan and an engagement subcommittee to support outreach to interested parties.
- Developing a countywide SGMA informational website (www.sonomacountygroundwater.org) containing background on SGMA, basin-specific information, frequently asked questions, community meeting calendars and notices, and other issue updates. Through the website and at community meetings over the last two years, staff developed an interested parties list, currently numbering over 850 people who are receiving monthly updates.
- Nearly monthly email updates to the interested parties list on GSA development beginning in 2016 to the present day.
- Three public workshops were held during the development of the GSA to inform and solicit input from interested parties on the development of the GSA. Staff issued press releases, public advertisements in print media, and shared announcements with the interested parties list to encourage attendance at workshops.
- Briefing the Basin Advisory Panel and Technical Advisory Committees for the voluntary Santa Rosa Plain Groundwater Management Program (SRP-GMP) at their regular quarterly and bi-monthly meetings.
- Numerous presentations have been given (and continue to be given) by various community and interest groups.
- Holding multiple public meeting sessions at Board and Council meetings to consider GSA formation. Each board or council meeting was an opportunity to share information and solicit input from interested parties.

As described in Task 2 of the Work Plan, these activities will be continued and expanded during the next phase of GSP development. GSA staff is currently working with the Advisory Committee to develop a Community Engagement Plan with the following draft goals:

- Enhance understanding and inform the public about water and groundwater resources in the Santa Rosa Plain and the purpose and need for the GSP.
- Engage a diverse group of interested parties and stakeholders and promote informed community feedback throughout the GSP preparation and implementation process.
- Coordinate communication and involvement between the GSA (Board, Advisory Committee and staff), and other local agencies (including other GSAs), elected and appointed officials, and the general public.
- Utilize the GSA Advisory Committee to facilitate a comprehensive public engagement process.
- Employ a variety of outreach methods that make public participation easy and accessible. Hold meetings at times and venues that encourage broad participation.
- Respond to public concerns and provide accurate and up-to-date information.
- Manage the community engagement program in a manner that provides maximum value to the public and an efficient use of GSA and local agency resources.

Through its Community Engagement Plan, the GSA plans robust outreach to DACs and EDAs. Engagement will include Spanish language communications, and reaching out to DACs through hands-on events and activities (festivals, churches, school gatherings). In order to engage the thousands of residents displaced by the fires, the GSA will cast a wide communications net.

The GSA received several letters of support from non-profits and local agencies who represent the DACs and EDAs. Please see Att8_2017SGWPC2_EDA_3of3 and Att7_2017GSWPC2_DAC_3of3 for Letters of Support.

**Groundwater Sustainability Plan Work Plan
Santa Rosa Plain Groundwater Sustainability Agency**

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1.0 Introduction and Background

This Work Plan (Scope of Work) presents the approach for developing a Groundwater Sustainability Plan (GSP or Plan) for the Santa Rosa Plain Groundwater Subbasin (Basin), which is designated as medium priority basin number 1-55.01 in California Department of Water Resources (DWR) Bulletin No. 118. The GSP will be developed through a transparent and public process based on the best available science and information such that it can be adopted by the Santa Rosa Plain Groundwater Sustainability Agency (GSA) and submitted to the State on or before January 31, 2022.

Objectives of the proposed project include developing a GSP that:

- Meets requirements of the Sustainable Groundwater Management Act (SGMA) and DWR's adopted Groundwater Sustainability Plan Emergency Regulations (GSP Regulations) by establishing criteria and management actions that will achieve and maintain sustainable groundwater management in the Santa Rosa Plain
- Incorporates the best available scientific and technical information by building on the strong technical foundation established through previous technical studies and voluntary groundwater management activities
- Establishes a governance structure that provides for significant public and community engagement and integrates the perspectives and addresses the needs of the many diverse users and uses of groundwater resources within the Basin
- Leverages the limited available funding and local resources through continued regional coordination and information sharing with other local GSAs.

Work Plan Structure and Organization

The Work Plan is organized as follows:

- Introduction (Section 1.0)
- Proposed GSP development approach, including roles and coordination of the involved staff, boards, committees, consultants and the public (Section 2.0)
- Scope for GSP development (Section 3.0), which includes four primary tasks:
 - Task 1 GSA Formation and Establishment of Governance Structure
 - Task 2 Communication, Outreach and Community Engagement
 - Task 3 Prepare GSP
 - Task 4 Project Management and Grant Administration
- Summary of Cost Estimate and Schedule, which are provided as Att5_2017SGWPC2_Budget_1of1 & Att6_2017SGWPC2_Schedule_1of1 (Section 4.0)

A summary of groundwater conditions, previous studies and groundwater management activities and identification of key data needs and challenges is provided in the Project Justification (Att3_2017SGWPC2_ProJus_1of1). Additional information on groundwater conditions in the Santa Rosa Plain is provided as Appendix A to this Work Plan.

2.0 Proposed Groundwater Sustainability Plan (GSP) Development Approach

This section describes the overall approach to the process of developing the GSP, including roles, responsibilities and coordination among staff, boards, committees and the public. Development of the GSP will be a collaborative and iterative process that builds upon existing technical and policy information, including the 2014 voluntary groundwater management plan. The process will incorporate input from the GSA Board, the GSA Advisory Committee, GSA Member Agencies, groundwater users and the public. Preparation of the GSP will have a robust public outreach component to solicit community involvement and input, with a specific focus on SGMA-identified interested parties.

Roles and Responsibilities

Roles and responsibilities of organizations and groups that will be key to the successful development of the GSP are defined in the following sections.

GSA Board

The GSA formed through a Joint Exercise of Powers Agreement (JPA) entered into by the cities of Cotati, Rohnert Park and Santa Rosa, Town of Windsor, Sonoma Resource Conservation District, Goldridge Resource Conservation District, Sonoma County Water Agency and County of Sonoma. The GSA has a governing board of nine, including representatives of each of the eight JPA member agencies and one representative for the Public Utilities Commission-regulated and mutual water companies in the Basin.

The GSA Board will receive updates on GSP development progress and consider recommendations from the GSA Advisory Committee at its bi-monthly public meetings and will provide guidance and direction on key components of the GSP. The GSA Board is responsible for approving the GSP and authorizing its filing with DWR.

GSA Advisory Committee

The GSA Board has formed an Advisory Committee comprised of 18 members, including one member appointed by each JPA Member Agency (eight members), one member representing the Public Utilities Commission-regulated and mutual water companies in the Basin, one member each appointed by the City of Sebastopol and

the Federated Indians of Graton Rancheria, and seven interest-based members appointed by the GSA Board. The interest-based members include one business community representative, two representatives for agricultural interests, two for environmental interests, and two for rural residential well owners. Advisory Committee membership is intended to reflect the diverse interests of local public agencies and groundwater users and uses in the Basin. The Advisory Committees are expected to report to, and seek input from their larger constituency groups on key components and proposals related to GSP development.

The Advisory Committee's purpose is to work towards consensus and incorporate community and stakeholder interests into recommendations to the GSA Board on GSP development and SGMA implementation. The Advisory Committee will make written recommendations to the GSA Board that reflect the outcome of Committee discussions. To ensure that all viewpoints are heard and considered by the Board, Advisory Committee reports to the GSA Board will identify areas of agreement and disagreement among the Committee.

GSP Team

The Sonoma County Water Agency is providing technical and outreach services and is serving as the Plan Manager to the GSA through a service agreement approved by the GSA Board. In this role, Water Agency staff will be responsible for leading preparation of the GSP, including community engagement, and coordinating with the GSA Board, Advisory Committee, and GSA member agency staff. The GSP Team may also include consultants under contract to the Water Agency to assist on an as-needed basis. The GSP Team will be responsible for:

- Performing technical analysis and evaluation, including computer modeling, in support of developing the GSP;
- Presenting information and draft materials to the Advisory Committee and GSA Board for background and feedback;
- Addressing input and comments on draft components, sections and materials related to the GSP;
- Preparing draft and final versions of text, figures, and tables needed for the GSP; and
- Serving as primary contact with DWR and interface with U.S. Geological Survey (USGS) and other state and federal agencies for technical matters related to development of the GSP.

The draft sections of the GSP will be distributed in an iterative review process to the Advisory Committee and GSA member agency staff. The GSP Team will work collaboratively with all parties to reach consensus whenever possible on subsections and sections of the GSP as it is developed.

GSA Member Agency Staff

GSA member agency staff will meet regularly with the GSP Team and will be involved in: (1) briefing their respective GSA Board members on pertinent GSP components and activities; (2) planning the approach and sequencing for each

technical element of the plan; (3) reviewing draft materials and GSP sections; (4) providing guidance and assistance in addressing comments and input on the draft GSP from the Advisory Committee, the GSA Board and the public; and (5) providing relevant data and information that each member agency collects.

Additionally, member agency staff from the GSAs for all three medium-priority basins in Sonoma County meet on a routine basis to coordinate on common activities and programs and to promote consistency and efficiency among the three basins. These regional coordination meetings include the Interim Administrators for each GSA and the GSP Team to provide opportunities to leverage resources and opportunities across Sonoma County's three medium-priority basins. Resources to be leveraged include sharing templates and methodologies for certain GSP components, outreach resources, grant opportunities, and the development of data management system tools and technologies.

Community Members

Community members will be informed of the development of the GSP and will be asked to provide community perspectives and input at several key steps in the process, as further described in Section 3.0, Task 2, below.

3.0 Scope of Work

The proposed scope of work has been developed to meet the objectives identified in Section 1.0 and will follow the approach described in Section 2.0 to facilitate the coordination and stakeholder participation needed to develop a successful GSP.

Task 1 Groundwater Sustainability Agency (GSA) Formation and Establishment of Governance Structure (100% Complete)

Following passage of the SGMA, staff from local GSA-eligible agencies cooperated to develop a proposed governance structure for the Santa Rosa Plain Groundwater Sustainability Agency. These agencies consisted of the City of Cotati, City of Rohnert Park, City of Santa Rosa, City of Sebastopol, Gold Ridge Resource Conservation District, Sonoma County Water Agency, County of Sonoma, Sonoma Resource Conservation District, and the Town of Windsor. In forming the GSA, all GSA-eligible local agencies proactively engaged over a two-and-a-half-year period in the challenging process of collaboratively negotiating the formation of a single GSA to cover the entire Basin. The facilitated process included significant coordination and extensive meetings among local agencies within the Basin, commitment of resources, and a robust community engagement process (including three public workshops and numerous other presentations to various organizations and stakeholder groups). Some of the more significant activities associated with the GSA formation process are summarized below:

- In September 2015, an impartial facilitator from the Consensus Building Institute completed a Stakeholder Assessment Report on Implementing SGMA in Sonoma County, which found widespread community support for forming a single GSA for the Basin and laid out a framework and process for forming the GSA.
- In 2015, staff and the facilitator developed a communications plan and an engagement subcommittee to support outreach to interested parties.
- Staff of the JPA Member agencies developed a countywide SGMA informational website (www.sonomacountygroundwater.org) containing background on SGMA, basin-specific information, frequently asked questions, community meeting calendars and notices, and other issue updates. Through the website and at community meetings over the last two years, staff developed an interested parties list, currently numbering over 850 people who are receiving monthly updates.
- Staff of the GSA-eligible agencies provided nearly monthly email updates to the interested parties list on GSA development beginning in 2016 to the present day.
- Staff held three public workshops during the development of the GSA to inform and solicit input from interested parties on the development of the GSA. Staff issued press releases, public advertisements in print media, and shared announcements with the interested parties list to encourage attendance at workshops.
 - In fall 2015, the workshop focused on educating the public about groundwater in the Basin, generally, SGMA and its requirements.
 - In summer 2016, the public workshop focused on forming one GSA for the Basin, potential board membership, and the advisory committee concept.
 - In March 2017, the public workshop focused on the governance structure, including the governing board, voting proposals, and an advisory committee.
- Staff briefed the Basin Advisory Panel and Technical Advisory Committees for the voluntary Santa Rosa Plain Groundwater Management Program (SRP-GMP) at their regular quarterly and bi-monthly meetings and held three facilitated discussions with the 20-member Basin Advisory Panel to solicit input on GSA development.
- Lastly, the boards and councils of the GSA eligible agencies each held multiple public meeting sessions to consider GSA formation. Each board or council meeting was an opportunity to share information and solicit input from interested parties.

The GSA formed through a Joint Exercise of Powers Agreement (JPA) entered into by the cities of Cotati, Rohnert Park, and Santa Rosa, Town of Windsor, Sonoma Resource Conservation District, Gold Ridge Resource Conservation District, Sonoma County Water Agency, and County of Sonoma. The GSA held its first meeting and

public hearing on June 1, 2017, followed by filing a Groundwater Sustainability Agency Formation Notification with DWR on June 15, 2017.

Deliverables: 2015 Stakeholder Assessment Report, JPA, GSA Formation Notification online documentation

Task 2 Communication, Outreach and Engagement (5% Complete)

Each GSA Board and Advisory Committee member will present and report back periodically to their constituent groups to share information on GSP preparation progress and to receive input. Additionally, SGMA requires the GSA to consider the interests of all beneficial uses and users of groundwater, and encourage involvement of diverse social, cultural, and economic elements of the population within the Basin during GSP preparation and implementation. To meet this requirement, one of the first tasks of the GSA Advisory Committee is to develop a comprehensive community engagement plan and program. The goals of the program are to:

- Enhance understanding and inform the public about water and groundwater resources in the Santa Rosa Plain and the purpose and need for the GSP.
- Engage a diverse group of interested parties and promote informed community feedback throughout the GSP preparation and implementation process.
- Coordinate communication and involvement between the GSA and other local agencies (including other GSAs), elected and appointed officials, and the general public.
- Employ a variety of outreach methods that make public participation easy and accessible. Hold meetings at times and venues that encourage broad participation.
- Respond to public concerns and provide accurate and up-to-date information.
- Manage the community engagement program in a manner that provides maximum value to the public and an efficient use of GSA and local agency resources.

The community engagement program will be developed by GSA staff with input and advice from the Advisory Committee. The community engagement program will provide specificity on the timing and details of outreach, including the following opportunities for the public to directly participate in the planning process of the GSP:

- Constituent group outreach – GSA Board and Advisory Committee members will present and report back periodically to the groups that they represent.
- GSA Board and Advisory Committee meetings – These meetings will be noticed and open to the public.
- Community Workshops - Workshops will be held periodically for a variety of purposes, such as reporting on project progress and soliciting community feedback at project milestones. Specific workshops focused on components of the GSP preparation process are described under Task 4, below.

- Community Group Briefings - Community groups will be periodically briefed to learn about water and groundwater resources, the GSP preparation process, GSA progress, and to provide feedback.
- Interactive Website – The website, www.sonomacountygroundwater.org, will continue to provide the latest news about GSP development, information on upcoming activities, and links for contacting the GSA with questions and/or comments. There is an online form to request email updates and information on upcoming public participation opportunities. The website is envisioned to be a key communication tool for the GSP development process.
- Interested Parties E-Mail List – To provide direct information on the GSP process and GSA activities to interested parties. This list will use and build upon the interested parties list developed during the GSA formation process.
- Periodic use of social media channels –Social media, including Next Door, FaceBook and Twitter will be used to inform people about workshops, briefings and milestones, and to link people to educational materials and the website.
- Postcard mailing – A postcard will be mailed to all well-owners in the Basin to inform them of the GSA, and to provide GSA contact information and important milestones.

Informational materials on topics of interest will be prepared and disseminated to the public. Potential topics include basic groundwater technical information, legal and water rights issues, fee/rate considerations, groundwater management primer, and basic facts, figures, and frequently-asked-questions (FAQs) on water and groundwater resources in the Basin.

Deliverable: Community Engagement Plan.

Task 3 Prepare GSP (15% Complete)

The GSP will be prepared iteratively and in a logical progression, building on previously developed technical and policy information. Throughout the process of preparing the GSP, background materials along with draft text, figures and tables for each section will be provided to the GSA member agency staff, Advisory Committee, and GSA Board in advance of meetings for input and comment. As summarized in Section 2.0, draft materials will be distributed in an iterative review process to GSA Member Agency staff and the Advisory Committee. The Advisory Committee will then provide input and comment on draft sections to the GSP Team, which will make any necessary revisions, prior to presentation to the GSA Board for consideration along with any Advisory Committee recommendations. The GSP Team will work collaboratively with the GSA Member Staff and the GSA Advisory Committee to reach consensus whenever possible on subsections and sections of the GSP as it is developed.

In order to be responsive to input from the community, GSA Advisory Committee and the GSA Board, the scope of work described for Task 3 will be adaptive and may

require adjustments or modifications to the proposed scope of work and schedule. DWR will be kept apprised and consulted with for any proposed significant modifications or adjustments to the scope of work described herein.

For planning and implementation purposes, the GSP has been divided into seven major phases of development, which are consistent with DWR's GSP Annotated Outline Guidance Document:

- I) Prepare and Submit Initial Notification of GSP Preparation
- II) Define Plan Area and Basin Setting
- III) Develop Sustainable Management Criteria
- IV) Design Sustainability Progress Monitoring Program
- V) Identify and Evaluate Proposed Projects and Management Actions
- VI) Develop GSP Implementation Program, Costs, Detailed Schedule, and Reporting
- VII) Compile Complete GSP for Adoption by GSA

Phase I – Prepare and Submit Initial Notification of GSP Preparation

Prior to initiating development of a GSP, SGMA requires written notification to DWR and local agencies. The initial notification will provide information about the GSA's process for developing the GSP, including the manner in which interested parties may contact the GSA and participate in the development and implementation of the GSP. The required initial notification will be prepared, submitted to DWR and local agencies, distributed to the GSA's interested-parties email list and posted on the GSA website.

Phase II – Define Plan Area and Basin Setting

The next phase of GSP development will involve preparation of the Plan Area and Basin Setting section to inform the GSA Board, Advisory Committee and public about SGMA, the plan area and current understanding of the Basin. The main components of this section include:

- A description of the Plan Area
- Hydrogeologic conceptual model
- A description of current and historical groundwater conditions in the Basin
- Water budget for the Basin
- Determination of the need to develop management areas within the Basin

Primary technical studies and planning activities completed in the Santa Rosa Plain that will inform and contribute to the development of the Plan Area and Basin Setting are summarized below and include:

- Historical groundwater studies performed by the USGS (Cardwell, 1958) and DWR (Herbst et al,1982; Kadir and McGuire, 1987), provide data on groundwater resources in the Santa Rosa Plain, including groundwater levels and water quality representative of differing patterns of land use,

- groundwater development, and climate. Such data is integral for evaluating trends and patterns from more recently collected data, contributing to groundwater model calibration, and projecting future trends;
- A study conducted by the USGS (Nishikawa et al, 2013 and Wolfenden and Nishikawa, 2014) in collaboration with the Sonoma County Water Agency (Water Agency), the cities of Cotati, Rohnert Park, Santa Rosa and Sebastopol, the town of Windsor, the County of Sonoma, and the California American Water Company, which updated the hydrogeologic characterization of the Basin and provided an assessment of hydrologic conditions, including a description of historical groundwater levels and water quality changes. As part of this study, the USGS developed an innovative computer model utilizing the model code GSFLOW that fully integrates surface water and groundwater to better understand and manage the Santa Rosa Plain's water resources. Simulations performed using the model indicate that surface water and groundwater are strongly connected within the Basin, with an estimated 53% of the total groundwater pumped derived from a reduction in total streamflow.
 - Development and implementation of the voluntary SRP-GMP between 2011 and 2017 (Santa Rosa Plain Basin Advisory Panel, 2014), which has included stakeholder engagement, local agency coordination, evaluation of monitoring networks, and reporting. Annual Reports for the SRP- GMP were completed for Water Years 2015 and 2016. These reports described the hydrologic conditions for the preceding water year for the area covered by the voluntary SRP-GMP, which encompasses the entire Santa Rosa Plain subbasin defined in Bulletin 118. For each year surface water conditions were assessed by streamgage hydrographs within the Laguna Creek watershed and compared with climatic data. The records were used to quantify water budget information that will be utilized in the development of the GSP. Data gap assessments were also developed to evaluate the groundwater level monitoring network. Groundwater level contours were derived from the dataset for wells perforated in shallow and deep parts of the Basin and were used to make observations about groundwater flow dynamics such as flow paths, recharge areas, and groundwater level trends. Groundwater level trends were computed for all wells with sufficient observation coverage to determine the recent 5- or 10-year trends in groundwater levels.

While these studies and activities provide a strong framework for development of the Phase II components, significant additional information and evaluation will be needed to comply with SGMA. The following table summarizes the current availability of information related to each Phase II component and identifies new informational needs required by the GSP regulations:

GSP Component	Information available from existing SRP-GMP or studies	Additional GSP Requirements
Description of Plan Area - 354.8	Description of existing water resource management programs, jurisdictional boundaries, land use elements from general plans.	Well density maps, discussion of relationship between land use plans and GSP and how existing plans may affect ability to achieve sustainable groundwater management over 50-year planning horizon, description of how existing programs may limit operational flexibility in the Basin, summary of the well permitting process.
Hydrogeologic Conceptual Model - 354.14	Summary of Hydrogeologic Conceptual Model, description of principal aquifers and aquitards, general water quality, principal uses of each aquifer, 2 scaled cross-sections.	Description and assessment of boundaries, data gaps and uncertainty analysis, delineation of recharge and discharge areas
Groundwater Conditions - 354.16	Description of groundwater elevation trends over time, groundwater elevation hydrographs and contour maps, groundwater quality data.	Annual and cumulative change in groundwater storage based on groundwater-level changes, description and map of known groundwater contamination sites and plumes, rates and map of land subsidence, as applicable, identification of interconnected surface waters and groundwater dependent ecosystems and estimates on timing and quantity of stream depletions.
Water Budget - 354.18	Summary of historical and current Water Budget from GSFLOW model for Santa Rosa Plain Watershed.	Processing of output from existing model to define current, historical and projected groundwater budgets for Bulletin 118 Basin. Estimate of sustainable yield (based on development of Sustainable Management Criteria). Conduct Uncertainty Analysis. Future simulations incorporating 50 years of historical climate data, population projections, and climate change. Quantitative evaluation of availability or reliability of historical surface water supplies by source and water year type.
Management Areas - 354.20	Consider use of subareas defined in existing SRP-GMP	Describe reason for creation of management areas (if any), rationale for selecting different thresholds and objectives and how they will not impact sustainability of entire Basin

The proposed scope for preparing each Phase II component is described below.

Description of Plan Area

The Plan Area description will address the requirements of Article 4, Subarticle 1, Section 354.8 of the GSP Regulations and will include:

- A summary of jurisdictional areas and other land use features within the Basin
- Maps displaying updated land use designations, identification of water use sector and water source type, and density of wells per square mile
- Description of how existing monitoring networks and management programs will be incorporated into GSP monitoring
- A description of the relevant provisions of local General Plans (including but not limited to Land Use and Water Resource Elements), incorporating a description of how GSP implementation may change water demands, water availability and water supply assumptions in land use decision-making, a summary of the current process for well permitting, and information regarding land use planning outside the basins that may affect the Basin
- Additional GSP elements would include a description of current and historical water supply sources within the Basin, including imported Russian River water, tertiary-treated recycled water, and water-use efficiency programs

Hydrogeologic Conceptual Model

The hydrogeologic conceptual model will address the requirements of GSP 354.14 of the GSP Regulations and will characterize the physical components of the Basin and interaction of the surface water and groundwater systems in the Basin, including a description of the computer model of surface water and groundwater flow developed for the Basin. The hydrogeologic conceptual model will provide narrative descriptions and graphical representations of the regional geologic context of the Basin, Basin geometry, and groundwater flow dynamics. Geologic cross sections that identify major aquifers will be used to visualize the hydrogeology of the Basin, along with maps of aquifer properties, conditions, water quality, soil characteristics, and other data required by GSP 354.14 (d). As an informational tool, the hydrogeologic conceptual model will become the basis for much of the stakeholder understanding of groundwater behavior.

Data used to develop the cross-sections include well drillers' reports, geophysical records and interpretations, surface geology, isotopic analyses, published reports, and other geologic information. Data gaps for the hydrogeologic conceptual model include: a definable bottom of the Basin, identifying the primary water use for each aquifer, and identifying uncertainty. Development of the hydrogeologic conceptual model will rely on information described in the voluntary groundwater management plan and will be supported by a U.S. Geological Survey report that covers the groundwater Basin (Wolfenden and Nishikawa, 2014), and a geologic framework report (Sweetkind et al, 2010).

The numerical groundwater flow model, which uses the USGS GSFLOW model code, will underpin a significant portion of the GSP work. The GSFLOW model developed for the Basin is an integrated surface water and groundwater model incorporating

measured and estimated water demands, recycled water deliveries, and surface water diversions (Wolfenden and Nishikawa, 2014). Existing simulation results will satisfy portions of the historical water budget requirements in SGMA, but additional simulations of future conditions, baseline conditions, sustainable yield, and management actions will be needed.

The model contains an array of geologic, climate, and water supply information that, through their synthesis, will provide additional data that can be utilized and tested in the GSP. The model is currently undergoing an update to simulate historical conditions from 1970 to 2016. Future baseline scenario modeling will require forecasts of land use, population growth, and climate change.

Groundwater Conditions

Historical and present day groundwater conditions will be described in relation to undesirable results, including a description as of January 1, 2015. Data gaps and data uncertainty that limit basin understanding or evaluation of GSP performance will be included. The types of data to be presented include: groundwater level hydrographs, groundwater level contours for the major aquifers, streamflow stage and discharge hydrographs, precipitation data, land-use maps and statistics, and water quality measurements. Data will be presented in terms of water year type, identifying drought, wet, and dry years. The following additional information will also be included:

- Available information on potential land subsidence related to groundwater extraction
- Identification of interconnected surface water using a combination of groundwater-level contour maps, LIDAR datasets, streamflow data and the GSFLOW model
- Identification of groundwater dependent ecosystems by comparing statewide mapping being conducted by The Nature Conservancy with local information available from countywide LIDAR-based vegetation mapping and other local data sources

The conditions identified in this section represent the baseline conditions that will be utilized in setting the sustainable management criteria and for assessing the success of management actions.

Water Budget

The water budget for the Basin will provide an accounting and assessment of the total annual volume of surface water and groundwater entering and leaving the Basin, including historical, current and projected conditions, and an estimate of sustainable yield for the Basin. The groundwater budget for the Basin will detail annual groundwater and surface water fluxes by source type and by water year type. An assessment of current hydrologic conditions will be performed to incorporate the most recent hydrology, water supply, water demand, and land use

information. As rural domestic and agricultural groundwater uses represent an estimated 80% of the total groundwater use in the Basin, improving and refining water use estimates for these uses which are not metered or reported has been identified as a primary technical need. Previous water demand estimates for these rural uses will be re-assessed and different methods for estimating rural groundwater demands will be evaluated in consultation with rural groundwater users and agricultural irrigators for reasonableness to better constrain this critical component of the water budget. Examples of methodologies that will be assessed include the use of remote sensing technologies, use of the County's parcel database and aerial imagery, and comparison with water use information reported to the SWRCB by rural landowners in portions of the Basin through the Russian River Tributaries Emergency Regulation.

A minimum 10-year quantitative assessment of recent conditions will be derived for use in developing a 50-year baseline for projections of future budget information and aquifer response to proposed groundwater management activities. Projections of future groundwater conditions will forecast scenarios into the 50-year planning horizon that will incorporate estimates of future groundwater pumping, land use, population, climate change and other drivers of groundwater conditions and use. Future projections of total water delivery volumes will need to assess the reliability of imported surface water deliveries from the Russian River to meet demands of urban water users under various water year types and will partly rely upon the Urban Water Management Plan (UWMP; Sonoma County Water Agency, 2016) developed by the Sonoma County Water Agency, which forecasts water supply availability into 2040. Additional assumptions will be required for years after 2040. Known water budget data gaps include delineation of existing and potential recharge areas, and discharge areas, including springs and other wetlands. The groundwater budget will be derived in part from the calibrated groundwater flow model developed for the Basin, but will rely upon additional data and analyses to satisfy requirements of GSP 354.18. Uncertainty analysis will be performed on the groundwater flow model to determine the uncertainty in groundwater budget terms, for example uncertainty in the groundwater recharge flux in areas with little observational data.

A critical portion of the water budget work will be in determining the sustainable yield for the Basin, defined in SGMA as the amount of groundwater that can be withdrawn without causing "undesirable results." Calculation of sustainable yield will be informed by the results presented in the water budget but will also require extensive input from stakeholders, the GSA Advisory Committee and the GSA Board to determine what conditions constitute an "undesirable result" for the Basin. The calculation of sustainable yield will involve considerable groundwater simulations in order to determine the effects of varying pumping on potential undesirable results. Scenario-based modeling will incorporate variations in land use and population growth forecasts, along with variable groundwater pumping rates, while monitoring for simulated undesirable results. These simulations will be performed over the 50-year planning horizon of the GSP. The presentation of the sustainable

yield will also discuss the sustainable management criteria and the interdependency between the two.

Management Areas

An assessment of the need to identify specific management areas within the Basin will be performed. Management areas are distinct geographical areas within the Basin that may have different minimum thresholds, measurable objectives, monitoring, or project and management actions based on unique local conditions for water use, water source, geology, aquifer characteristics, or other factors. The process for determining the need for management areas will include evaluation of previously identified subareas of the Basin, those defined by the USGS based on hydrogeologic conditions, as well as an evaluation of geographic patterns for groundwater level trends, water chemistry, water use patterns and other factors.

Public Workshop

It is anticipated that a public workshop will be held at the completion of the initial Phase II draft to review findings and seek public input on the content and present the planned approach for Phase III of the GSP.

Phase III – Develop Sustainable Management Criteria: Sustainability Goal, Undesirable Results, Minimum Thresholds, Measurable Objectives and Interim Milestones. Streamflow Records.

The second phase of GSP preparation is the development of sustainable management criteria. This phase will involve a high level of technical analysis, stakeholder and community engagement and coordination, as it involves the establishment of new criteria for managing the Basin to sustainability.

Establishing, achieving, and maintaining sustainable groundwater management in the Basin will be accomplished through the development of *sustainable management criteria*. Setting of the Basin sustainability goal will occur through a local stakeholder process through the GSA Advisory Committee and other outreach tools to meet the SGMA mandate of having no significant and unreasonable *undesirable results* in the Basin within 20 years of GSP adoption. The actual methodologies and approaches utilized will be developed based on information from Phase II and stakeholder input, but it is expected that a combination of groundwater model simulations, empirical analyses of field data, and other robust hydrogeologic tools will be utilized to support the development of the Sustainable Management Criteria. Where possible, methodologies will be shared across basins within Sonoma County.

The sustainability goal will consider information from the Basin setting and will include a discussion of measures that will be implemented and how the sustainability goal will be achieved within 20 years of Plan implementation. *Sustainability indicators* will be identified, and *minimum thresholds* for each applicable sustainability indicator established to avoid undesirable results. The GSP

will describe the process and criteria used to define minimum thresholds for each sustainability indicator, along with the potential effects on beneficial uses/users, land uses and property interests. The Plan will identify how the minimum thresholds relate to existing standards and the measurement programs and metrics used to define them. The thresholds will also need to be developed in conjunction with the Projects and Management Actions in order to assure that the Sustainability Goal may be achieved. *Undesirable results* occur when one or more sustainability indicators experience conditions below the minimum thresholds that are significant and unreasonable due to groundwater conditions occurring throughout the Basin. The GSP will describe the process and criteria used to define undesirable results for each sustainability indicator, the groundwater conditions that would cause the undesirable result and the potential effects on beneficial uses/users, land uses and property interests. One or *more measurable objectives* for each sustainability indicator and associated *interim milestones* for every 5-year interval will be established to achieve the sustainability goal. The same assumptions and methods utilized in developing the thresholds will be utilized in developing the measurable objectives, where possible. The measurable objectives will be designed to allow for operational flexibility while accounting for climate variations and uncertainty.

For the Santa Rosa Plain, it is anticipated that five of the six undesirable results identified in SGMA will be evaluated for establishment of minimum thresholds (chronic lowering of groundwater levels, reduction in groundwater storage, degraded water quality, land subsidence, and depletions of interconnected surface water). Seawater intrusion will not be evaluated for the establishment of minimum thresholds, as the Basin is not physically connected to a source of seawater. It is anticipated that groundwater elevation will be used as a proxy to multiple sustainability indicators where a relationship can be shown, as provided for in the GSP Regulations. Progress towards meeting interim milestones will be reported to and assessed by DWR as GSPs are updated every five years.

Public Workshop

It is anticipated that three public workshops will be held at key milestones associated with Phase III.

Phase IV – Design Monitoring Program and Data Management System

The GSP will address the requirements of GSP 354.34, including a detailed description of the Basin-specific monitoring network, and will address GSP 352.2 regarding monitoring protocols and the data management system.

Assessment of Data Gaps and Improvement of Monitoring Network

Assessments of data gaps and preliminary recommendations for improvement of monitoring networks have been conducted through both the SRP-GMP and the Santa Rosa Plain Salt and Nutrient Management Plan (SNMP; City of Santa Rosa, 2013), as summarized below. These initial efforts will be incorporated into the GSP to: (1) form the basis and rationale for selecting potential representative monitoring locations; (2) describe how measurable objectives will be monitored for each

sustainability indicator; and (3) provide data for quantifying annual changes in water budget components.

The initial assessment of data gaps conducted to support the SRP-GMP was done using the USGS developed GSFLOW model. Additional analyses were performed by the Water Agency of the groundwater model budgets and model output to support SRP-GMP activities. Some of these analyses include determining the rate of surface-water groundwater interactions, calculation of subregional budgets, and analyzing groundwater budgets on timeframes different than those in the published report. Model output data was also utilized for an initial assessment of the surface-water groundwater interaction network. This work supported the data gap assessment undertaken by the SRP-GMP to determine where groundwater observation wells should be located based upon the modeled impact to water resources. Due to the strong connection between surface water and groundwater resources within the Basin, in addition to the tools described above to identify interconnected surface water and groundwater dependent ecosystems, alternate sources of funding will be pursued to install shallow monitoring wells in data gap areas near streams.

The initial assessment of data gaps conducted to support the SNMP is led by the City of Santa Rosa and is focused on developing a water quality monitoring program for the Basin. Work completed to date has been focused on developing a Monitoring and Reporting program, including compiling available water quality data for the Basin, coordinating with stakeholders and local agencies, developing a sampling and analysis plan and identifying data gaps.

Identified data gaps will be further evaluated through the data management system currently being developed for the Basin to better understand the distribution of depth specific pumping and existing data for each primary aquifer to prioritize additional data collection that will be needed for implementation of the GSP.

Monitoring Protocols

Monitoring protocols will be established to identify standards for measuring devices and other equipment as needed to implement the GSP. This may include but is not limited to devices to measure:

- Groundwater levels
- Groundwater quality
- Groundwater production
- Ground surface location and elevation (for potential groundwater production related land surface subsidence)
- Surface water flow (stream gauging)

The GSP will generally incorporate the Data Quality Objectives (DQO) process following the USEPA *Guidance on Systematic Planning Using the Data Quality Objectives Process* (US EPA 2006), as recommended in the DWR BMPs. The DQO process will be used to help guide the GSA to the development of the most efficient monitoring process to meet the measurable objectives of the GSP and sustainability

goal through the following steps (DWR BMP for Monitoring Networks and Identification of Data Gaps, 2016):

1. State the problem – define sustainability indicators and planning considerations of the GSP and sustainability goal
2. Identify the goal – describe the quantitative measurable objectives and minimum thresholds for each of the sustainability indicators
3. Identify the inputs – describe the data necessary to evaluate the sustainability indicators and other GSP requirements (i.e., water budget)
4. Define the boundaries of the study – Extent of the Bulletin 118 groundwater basin, and for factors affected outside basin, the watershed.
5. Develop an analytical approach – Determine how the quantitative sustainability indicators will be evaluated (i.e., are special analytical methods required that have specific data needs)
6. Specify performance or acceptance criteria – Determine what quality the data must have to achieve the objective and provide some assurance that the analysis is accurate and reliable
7. Develop a plan for obtaining data – Once the objectives are known determine how these data should be collected. Existing data sources should be used to the greatest extent possible

Data Management System

SGMA requires that each GSA develop and maintain a data management system (DMS) that is capable of storing and reporting information relevant to the development or implementation of the GSP and monitoring of the Basin. Sonoma County received a \$250,000 Stressed Counties Grant under Proposition 1 to develop a DMS to be applied to each of the three SGMA medium priority basins in Sonoma County and improve efficiency of technical work needed to complete GSPs. The web-based DMS is now under development and will be utilized for storing, retrieving, analyzing, visualizing, exporting and reporting groundwater and other hydrologic and related data. Additionally, the DMS will include a public web-portal to facilitate community engagement by improving public access to groundwater data and information.

The development of the DMS and public web-portal is scheduled for completion in early 2018. While the DMS and associated tools will be integral in the work needed to develop the GSP, the scope and funding for the development of the DMS is a separate effort and is not included as part of the scope or budget for this grant application. Work related to supporting, maintaining and updating the DMS after its development starting in the beginning of calendar year 2019 is not covered by the Stressed Basins grant and is included in the budget for this grant application.

Public Workshop

It is anticipated that a public workshop will be held at the completion of the initial Phase IV draft to review findings and seek public input on the content and present the planned approach for Phase V of the GSP.

Phase V – Identify and Evaluate Proposed Projects and Management Actions

This phase will identify projects and management actions necessary to respond to changing conditions, address problems, and to achieve the Sustainability Goal. The types of projects that will be considered include those identified through the voluntary GMP program, including continued encouragement for conjunctive use of surface water and groundwater; increase water conservation and efficiency; increase stormwater recharge; groundwater banking; and increase recycled water deliveries to help offset pumping demands. Other projects and management actions will also be considered based on input from the Advisory Committee, GSA Board and the community. The selection of projects and management actions will consider implementation timetable, expected benefits, required legal authority, regulatory permitting and implementation costs. For each sustainability indicator, projects and management actions will be identified including determining the minimum threshold that will trigger implementation. For example, if water levels in a monitoring well fall below the minimum threshold, a project response could be to provide recycled water to groundwater users. Projects and management actions will be assessed in terms of their benefit for each Measurable Objective. The expected benefit for each of the proposed projects and management actions will be predicted through simulations using the groundwater flow model where appropriate. These efforts will need to account for uncertainty arising from model errors and other hydrogeologic factors determined in the Basin Setting that inhibit accurately predicting the effects of projects and management actions. This phase will address the GSA's legal authority to implement the project, relevant permitting processes and requirements, and if reliant on Russian River water supplies, will include a water supply reliability analysis.

Public Workshop

It is anticipated that a public workshop will be held at the completion of the initial Phase V draft to review findings and seek public input on the content and present the planned approach for Phase VI of the GSP.

Phase VI – Develop GSP Implementation Program, Costs, Detailed Schedule, and Reporting

Phase VI will involve the development of GSP implementation costs and general description of how the GSA plans to meet those costs, along with a detailed schedule for GSP implementation, including annual and five-year reporting and updating. Currently, the GSA is funded through member contributions, and is initiating a financial options study that will identify and evaluate potential options, including fees or rates, needed to support GSA administration and assist with GSP preparation until GSP adoption. Once the GSP is prepared, an additional financial options study would likely be conducted to support GSP implementation costs.

SGMA requires annual and five-year reporting, and a DWR adequacy review will take place for the initial GSP development, at each annual report, and at each GSP re-

evaluation throughout the 2020/2022 to 2040/2042 periods. Material submitted to DWR will be submitted electronically through an online reporting system and in a format provided by the state as required by SGMA. All data and information reported to DWR will comply with § 352.4. Data and Reporting Standards. The DMS will be designed to facilitate the submittal of the required data on an annual basis to DWR as part of the Annual Report.

Public Workshop

It is anticipated that a public workshop will be held at the completion of the initial Phase VI draft to review findings and seek public input on the content.

Phase VII – Compile Complete GSP for Adoption by GSA

The final phase of GSP development involves the compilation of the complete GSP and preparing for adoption by the GSA Board. This involves compiling sections from the previous phases into a single document and preparing additional required components, such as administrative and jurisdictional information, an executive summary, list of references used in development of the GSP, and other supporting information and materials.

The GSA will make the plans and prepare the necessary documents for GSP adoption including:

- Providing a 90-day notice to local cities and counties
- Posting of a public notice for the hearing to adopt
- Assisting with conducting the public hearing to adopt
- GSP submittal to DWR

Task 3 Deliverables: Initial Notification of GSP Preparation , 2015 and 2016 Annual Reports for SRP-GMP, Data Gap Assessment Reports, Monitoring and Reporting Program for SNMP, Public Review Draft of GSP, Public Notice for Hearing to Adopt, Adopted GSP

Task 4 Project Management and Grant Administration (0% Complete)

Project Management Activities

The GSP Team will provide the necessary resources, project management, and guidance to ensure that the project and GSP are completed successfully and submitted on time to DWR. Project management tasks include use of effective project management tools, resources to be used for the duration of the project, tracking of all consultant resources and efforts, and regular communications with the GSA and their staff.

Quarterly Project Summaries, Invoicing and Periodic Budget Review

The GSP Team will prepare and submit quarterly invoices and project summaries to provide DWR with a comprehensive status on the project, including:

- Activities completed during the billing period
- Activities planned for the following billing period
- Budget spent and remaining as of the end of the billing period
- Identification of potential project management issues and solutions

There are a number of assumptions and uncertainties with the cost estimate and completion of the GSP. As such, the GSP Team will provide a project and budget review annually for submittal to DWR as part of its annual budget planning process.

4.0 Cost Estimate and Schedule

The Cost Estimate and Detailed Schedule to implement this GSP Work Plan are provided as Att5_2017SGWPC2_Budget_1of1 & Att6_2017SGWPC2_Schedule_1of1. Assumptions for the Cost Estimate are included in the Work Plan narrative, listed in the Cost Estimate attachment, and further discussed below. The Detailed Schedule includes estimated duration times for tasks and subtasks and dependencies between tasks and subtasks.

There are a large number of uncertainties inherent in developing the GSP and in estimating the associated costs, including but not limited to:

- Work with Advisory Committees and the challenges with reaching consensus.
- Work related to informing the community and groundwater users and soliciting useful input on complex technical issues and the new SGMA requirements.
- The development of sustainability management criteria – this is new to groundwater management planning imparting additional uncertainty to process and the time it will take, and will involve the development and agreement on several key items that will be challenging:
 - Sustainability Criteria including setting the goal, measureable objectives, interim milestones, minimum thresholds and defining undesirable results, and
 - Discussing potential allocation schemes and pumping reductions if necessary.

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Appendix A

Summary of Hydrogeologic Conceptual Model and Groundwater Conditions - Santa Rosa Plain

This summary of the conceptual model of groundwater conditions in the Santa Rosa Plain Watershed is intended to provide an overview of the hydrogeologic setting and historical and recent groundwater conditions. Detailed information is available in the following key studies that document the conditions of the Santa Rosa Plain Watershed:

- 2014, Santa Rosa Plain Basin Advisory Panel. Santa Rosa Plain Watershed Groundwater Management Plan. http://www.scwa.ca.gov/files/docs/projects/srgw/SRP_GMP_12-14.pdf
http://www.scwa.ca.gov/files/docs/projects/svgw/SonValley5YrReview_FINAL.pdf
- 2014, U. S. Geological Survey. Simulation of groundwater and surface-water resources of the Santa Rosa Plain watershed, Sonoma County, California: U.S. Geological Survey Scientific Investigations Report 2014–5052. <https://pubs.usgs.gov/sir/2014/5052/>
- 2013, U. S. Geological Survey. Hydrologic and geochemical characterization of the Santa Rosa Plain watershed, Sonoma County, California: U.S. Geological Survey Scientific Investigations Report 2013–5118. <https://pubs.usgs.gov/sir/2013/5118/>

Watershed and Climate: The Santa Rosa Plain Watershed is located within the North Coast Ranges of northern California, which has a Mediterranean climate, with moderate temperatures and distinct wet and dry seasons. About 90 percent of the annual precipitation typically occurs during the months of November through April, and nearly half of the precipitation is due to atmospheric rivers, which concentrate rainfall and runoff along narrow bands.

Mean annual precipitation at Santa Rosa has been variable and averaged 30.7 inches in the Basin during the 113-year period from 1903 through 2016, with 7 of the last 10 years seeing below average rainfall, including 8 years of a state-defined drought. Stream discharge patterns typically mirror rainfall, with peak flows occurring in response to precipitation. Significant for Santa Rosa Plain Watershed is that late spring rains provide soil moisture to crops, thereby reducing spring and early summer groundwater demands. Hydrologic models of potential climate change scenarios predict that precipitation could be subject to increased variability resulting in reduced water supply reliability and increased water demands due to increased evapotranspiration rates during warmer and extended summers.

Hydrogeology: The Santa Rosa Plain watershed is located within the geologically complex North Coast Ranges of California, dominated by northwest trending valleys

with faults that may act as barriers to groundwater flow, or conduits to deeper saline water intrusion. The four main geologic units (groups of rocks with similar characteristics) which form the primary aquifers in the Santa Rosa Plain are sedimentary deposits of the Alluvium/Glen Ellen Formation, the Wilson Grove Formation, the Petaluma Formation, and the Sonoma Volcanics. The Basin's best water-producing units are stream channels filled with alluvial (water and air deposited sand, silt, clay and gravel) sands and gravels; basin-fill alluvium and alluvial fan deposits that connect the Santa Rosa Plain with its bordering hills; and massive sandstone units of the Wilson Grove Formation extending beneath the Basin from the low western hills. The Sonoma Volcanics, a thick sequence of lava flows present along the eastern boundary of the Basin, and the Petaluma Formation, a shale and sandstone unit that extends beneath much of the deeper portions of the Basin, produce variable amounts of water.

Groundwater Levels and Movement: Monitoring of groundwater levels over time indicates a general pattern of groundwater movement from the highlands towards the axis of the Basin to the location of the Laguna de Santa Rosa, which historically was the main location of natural groundwater discharge. In addition, groundwater moves toward and discharges into stream channels, sustaining stream baseflow in many parts of the Basin. Historically, as more wells were added to the Basin and agricultural, domestic and urban pumpage increased over time, groundwater levels dropped, less groundwater discharge occurred in the Laguna De Santa Rosa and more discharge resulted from well pumpage. As pumping increased, two pumping depressions formed, one in the west part of the Basin and the other in the Rohnert Park-Cotati area of the Basin in the early 1990's, with increased urban pumping considered largely responsible. Since the early 2000s, increases in imported surface water from the Russian River and water conservation have greatly reduced groundwater demand. More recent monitoring and groundwater level contour maps show significant groundwater recovery in the Rohnert Park-Cotati area of the Basin, with the depressions largely recovered, and shallow wells are generally stable while deeper zone wells vary with some increasing, some stable and some declining groundwater levels.

Water Quality: Groundwater quality within the Santa Rosa Plain Watershed is highly variable throughout the study area and generally acceptable. Manganese, iron, boron, and arsenic are potential constituents of concern that occur naturally in groundwater and exceeded secondary or health-based standards for drinking water. While concentrations of chloride and specific conductance are predominantly well below secondary drinking water standards, increases have occurred in two-thirds and three-quarters of the wells evaluated for the study, respectively.

Water Budget: The US Geological Survey developed a groundwater flow model that was used to simulate an average groundwater budget for the Plan Area from 1976 to 2010:

- Rainfall percolation and streambed infiltration together recharged an estimated 73,000 acre-feet per year of groundwater, accounting for over 90 percent of total groundwater inflow on average.
- Overall, streams are a net source of groundwater recharge. That is, over the entire watershed, more surface water was lost to groundwater (known as a losing stream reach) than was gained by groundwater flowing into streams (known as a gaining stream).
- Groundwater pumping increased from a long-term average of 36,000 acre-feet per year (1976-2010) to an estimated 42,000 acre-feet per year between 2004 and 2010. The increase is mainly attributed to increased rural pumping.
- From 1976 to 2010, 120,000 acre-feet were lost from overall groundwater storage, or an average of roughly 3,300 acre-feet per year.

Increased pumping has reduced the total amount of groundwater in storage across the Plan Area, and groundwater levels have declined slightly - although the estimated storage loss is only a small percentage of both total groundwater storage and the long-term average recharge rate. However, because groundwater helps support stream flows, even slight declines in groundwater levels may result in decreased streamflows overall, with associated ecosystems and habitat decline.

The model also examined the potential impacts of four climate change scenarios on the Plan Area, including the effects of two different global climate change models, combined with both higher and lower greenhouse gas emission scenarios. General results of all four climate change simulations include an overall lowering of groundwater levels, reduced baseflow in streams, reduced evapotranspiration and reduced groundwater discharge to wetlands and springs. Declining groundwater levels also result in additional losing stream reaches, further reducing streamflow as larger quantities of surface water sinks into the ground.

The Santa Rosa Plain GSA is requesting a cost share waiver reduction of the 50% required cost share, as the project serves the needs of DACs and EDAs which cover 24% and 36%, respectively, of the Basin area. The budget below reflects a 25% cost share, assuming DWR grants the cost share waiver reduction. Should the cost share waiver reduction not be granted by DWR, the GSA is prepared to meet the full original 50% cost share requirement that would be needed to fully implement and complete the project

Table 4 – Project Budget					
Proposal Title: Santa Rosa Plain Groundwater Sustainability Plan Project					
Project Title: Santa Rosa Plain Groundwater Sustainability Plan Project					
Project serves the need of a DAC?: <input checked="" type="checkbox"/> Yes No					
Cost Share Waiver request?: <input checked="" type="checkbox"/> Yes No					
Tasks		(a)	(b)	(c)	(d)
		Requested Grant Amount	¹ Cost Share: Non-State Fund Source	Other Cost Share	Total Cost
Task 1	Formation of GSA & Establishment of Governance Structure	-	182,266.00		182,266.00
Task 2	Public Outreach/Community Engagement	213,124.00	-		213,124.00
Task 3	GSP Development	786,876.00	106,898.00		893,774.00
	<i>Phase I: Prepare and Submit Initial Notification of GSP Preparation</i>	3,264.00	-		3,264.00
	<i>Phase II: Define Plan Area and Basin Setting</i>	115,932.00	106,898.00		222,830.00
	<i>Phase III: Develop Sustainable Management Criteria</i>	262,430.00	-		262,430.00
	<i>Phase IV: Design Sustainability Progress Monitoring Program</i>	133,670.00	-		133,670.00
	<i>Phase V: Identify and Evaluate Proposed Projects and Management Actions</i>	157,590.00	-		157,590.00
	<i>Phase VI: Develop GSP Implementation Program, Costs, Detailed Schedule, and Reporting</i>	74,450.00	-		74,450.00
	<i>Phase VII: Compile Complete GSP for Adoption by GSA</i>	39,540.00	-		39,540.00
Task 4	Project Management & Grant Administration	-	44,150.00		44,150.00
Grand Total		1,000,000.00	333,314.00	-	1,333,314.00

¹ Source of Funding: Consultant and staff costs incurred by Santa Rosa Plain GSA and its member agencies after January 1, 2015 related to GSA formation, voluntary groundwater management activities that contribute to GSP development, and grant administration and management.

Table 5 – Proposal Budget						
Proposal Title: Santa Rosa Plain Groundwater Sustainability Plan Project						
Individual Project Title		(a)	(b)	(c)	(d)	(e)
		Requested Grant Amount	¹ Cost Share: Non-State Fund Source	Other Cost Share	Total Cost	% Cost Share
(a)	Santa Rosa Plain Groundwater Sustainability Plan Project	1,000,000.00	333,314.00	-	1,333,314.00	25.00%
(b)	Grand Total	1,000,000.00	333,314.00	-	1,333,314.00	

¹ Source of Funding: Consultant and staff costs incurred by Santa Rosa Plain GSA and its member agencies after January 1, 2015 related to GSA formation, voluntary groundwater management activities that contribute to GSP development, and grant administration and management.

Budget Justification

The total cost estimate for the project is \$1,333,314 as shown in Tables 4 and 5. This includes \$1,000,000 in requested grant funds and \$333,314 in local cost share. As described in Attachments 7 and 8, the Santa Rosa Plain GSA is eligible for a 50% cost share waiver based on the presence of Disadvantaged Communities and Economically Distressed Areas, which respectively cover 24% and 36% of the Basin area. The \$333,314 local cost share represents 25% of the total project cost (50% cost share waiver of the 50% cost share requirement for the grant). As further indicated in Table 4, should the cost share waiver not be granted by DWR, the GSA is prepared to meet the full 50% cost share requirement that would be needed to fully implement and complete the project.

While the PSP requires only that costs be shown by task, estimated costs for the seven phases of Task 3 for GSP preparation are also shown in Table 4 to indicate the anticipated level of effort associated with each phase of GSP preparation, which constitutes the most significant component of the project. Estimated costs in the budget are based on the experience of GSA Team staff in local groundwater management planning and budgets of other groundwater management planning efforts. While the estimated costs are considered to be realistic for completing the project, a number of assumptions and uncertainties have been identified below, as the iterative process for developing the GSP is new throughout the State and will include significant community input.

- The costs assume a high degree of coordination between the three GSAs in Sonoma County;
- The costs assume that any additional data collection efforts determined to be needed for completing the GSP will be funded through other sources;
- Uncertainties exist related to the level of effort that will be needed to inform the community and groundwater users and solicit useful input on complex technical issues and the new SGMA requirements;
- The development of sustainability management criteria, including setting the goal, measureable objectives, interim milestones, minimum thresholds and defining undesirable results, is new to groundwater management planning and will require significant community input, imparting additional uncertainty to the process and the schedule.

Notwithstanding the above assumptions and uncertainties, the GSA is committed to completing the project on time and meeting the SGMA deadline for GSP submittal.

Project Schedule

A schedule for the Santa Rosa Plain Groundwater Sustainability Plan Project is provided below both in tabular and bar chart form, which show the projected start and end dates and milestones for each task and phase. The tasks and phases shown are consistent with the tasks and phases in the Work Plan and Budget. As shown in the schedule, work activities have been ongoing since 2015 with the formation of the Santa Rosa Plain GSA and are projected to continue through completion of the GSP no later than January 2022. An additional four months have been added to the end of the schedule to allow for grant closeout reporting.

Key schedule dependencies and predecessors include the following:

- Communication, Outreach and Engagement will occur throughout the entire project and is closely linked with each phase of GSP development identified under Task 3 through ongoing communication and periodic public workshops;
- The seven phases identified under Task 3 are generally sequential in nature with actions or information developed in each preceding task necessary for completion of the following tasks;
- Some components of Phase II of Task 3 (Define Plan Area and Basin Setting) will require information from the later Phase III of Task 3 (Develop Sustainable Management Criteria), such as sustainable yield estimates; and
- Phases III and IV of Task 3 (Develop Sustainable Management Criteria and Design Sustainability Progress Monitoring Program) will be developed concurrently, as identification of monitoring points and protocols is integral to the establishment of sustainable management criteria including minimum thresholds and measurable objectives.

As described in the Work Plan in Attachment 4, due to uncertainties associated with developing the GSP and in order to be responsive to input from the community, GSA Advisory Committee and the GSA Board, the scope of work and schedule will need to be adaptive and may require adjustments or modifications. For example, the timing and frequency of milestones associated with GSA Board and Advisory Committee discussion and input and community workshops will be adjusted as needed based on actual progress achieved. DWR will be kept apprised and consulted with for any proposed significant modifications or adjustments to the scope of work and schedule. Notwithstanding the above, the GSA is committed to completing the project on time and meeting the SGMA deadline for GSP submittal.

Proposal Schedule

The Proposal's overall schedule is identical to the Project schedule described above, as the Proposal consists of a single project.

**Groundwater Sustainability Plan Schedule
Santa Rosa Groundwater Sustainability Agency**

		Start Date	End Date
Task 1: GSA Formation and Establishment of Governance Structure		1/1/2015	6/15/2017
Task 2: Communication, Outreach and Engagement		1/1/2015	1/31/2022
Task 3: Prepare GSP		1/1/2018	1/31/2022
Phase I	Prepare and Submit Initial Notification of GSP Preparation	1/1/2018	2/28/2018
Phase II	Define Plan Area and Basin Setting	3/1/2018	3/17/2019
Phase III	Develop Sustainable Management Criteria	3/17/2019	8/6/2020
Phase IV	Design Sustainability Progress Monitoring Program	11/18/2019	8/6/2020
Phase V	Identify and Evaluate Proposed Projects and Management Actions	8/6/2020	6/23/2021
Phase VI	Develop GSP Implementation Program, Costs, Detailed Schedule, and Reporting	6/23/2021	11/15/2021
Phase VII	Compile Complete GSP for Adoption by GSA	11/15/2021	1/31/2022
Task 4: Project Management and Grant Administration		1/1/2018	4/30/2022

