Scope of Work and Fee Estimate

To:	Stephanie Bertoux, Executive Director, San Antonio Basin Groundwater Sustainability Agency
From:	Michael McAlpin and Dave O'Rourke, GSI Water Solutions, Inc.
Date:	September 13, 2024
RE:	Quarterly Groundwater Water Level Monitoring and Reporting, Calendar Year 2025, San Antonio Creek Valley Groundwater Basin

GSI Water Solutions, Inc. (GSI), is pleased to present this proposal to provide quarterly groundwater level monitoring and reporting services during the 2025 calendar year to support the ongoing groundwater monitoring effort in the San Antonio Creek Valley Groundwater Basin (Basin). We welcome the opportunity to continue to support the San Antonio Basin Groundwater Sustainability Agency (SABGSA) on this important effort. GSI brings the experience needed to efficiently meet your goals for this project. Our team offers the following distinctions:

- **The ability to hit the ground running.** GSI has successfully completed quarterly groundwater monitoring work for the SABGSA since 2019. We are deeply familiar with monitoring locations and the procedures for coordinating with private well owners and the Vandenberg Space Force Base (VSFB). We are prepared to continue conducting this work without any ramp-up time.
- **Deep expertise to meet your expectations.** Our team includes three Professional Geologists—two of whom are also Certified Hydrogeologists—with the skills and expertise required to ensure an accurate outcome. Our team members bring comprehensive knowledge of hydrogeology in the area from our work on the Basin's Groundwater Sustainability Plan (GSP), as well as years of experience conducting groundwater monitoring and reporting that is essential to complying with the protocols and regulations outlined by the Sustainable Groundwater Management Act (SGMA).
- **A streamlined and efficient approach.** Our team includes the same personnel who have supported groundwater monitoring efforts for the SABGSA in the past, which avoids knowledge gaps and promotes an efficient workflow. The same team members also support development of the Groundwater Sustainability Plan Annual Report, which further provides continuity of institutional knowledge. Our approach focuses on delivering streamlined updates of field observations to effectively represent the Basin's path to sustainability.

Previously, GSI developed Annual Groundwater Elevation Monitoring Reports for the SABGSA as part of the Basin's quarterly groundwater monitoring conducted on behalf of the SABGSA by GSI. The report summarized measured groundwater elevation data from the previous four quarters, field observations, and provided recommendations for future monitoring. Consistent with the last two annual reporting periods, to prevent duplication of work, GSI proposes to combine the Basin's Annual Groundwater Elevation Monitoring Report for calendar year 2025 with the Basin's GSP Annual Report for water year 2025. Therefore, the budget to complete the Annual Groundwater Elevation Monitoring Report is included under a separate scope of work.

Scope of Work

Task 1 – Quarterly Groundwater Level Monitoring and Landowner Communication

Groundwater level measurements will be collected manually on a quarterly basis in the 41 accessible wells included in the Basin Groundwater Level Monitoring Network (Monitoring Network).[1] Water level data will be collected at more frequent intervals using existing data-recording pressure transducers (transducers) installed in 10 of the 41 wells[2]. GSI will download water level data from the transducers and calibrate with manual depth to water readings on a quarterly basis. In the event of transducer failure, GSI will coordinate the removal, replacement, and installation of the transducer. For budgeting purposes, it is assumed that one transducer and data cable will need to be replaced each year.

Groundwater level measurements are documented in the field using a tablet that can operate ArcGIS Field Maps in conjunction with ArcGIS Enterprise. Data can be sent in real time directly to our secure SQL Server, or when cellular data isn't available, data can be collected offline and synced once cellular service has returned. The Field Maps application allows our team to build in data triggers and smart forms with features such as conditional visibility, required fields, and hints. These features improve the speed, accuracy, and usability while in the field by providing consistent workflows, automated field population and hints to assist the field team by providing information related to the type of data that should be collected for that field. The field team can also access past sampling events to compare existing conditions to a previous sample date.

Prior to each quarterly monitoring event, GSI will contact well owners to coordinate access to the wells and request that well owners shut off the well for at least 8 hours before the monitoring event so that a static measurement can be obtained. If access to any of the wells is restricted, water levels may not be measured in affected wells. GSI will conduct a good faith effort to access each well.[3]

Basin Monitoring Network wells in the Barka Slough (Slough) area are located on VSFB property. Because the wells are located near or within the Slough, the vegetation along the access trails can become overgrown. GSI (under separate scope), in collaboration with VSFB and the SABGSA, has been able to successfully coordinate vegetation trimming (outside of bird nesting season) along the well access trails to maintain access to the Basin Monitoring Network wells. GSI has worked to develop strong and friendly working relationships with VSFB representatives and Basin well owners.[4]

The SABGSA completed a well registration program in 2023 in partnership with Wallace Group Engineering. The well registration data will be reviewed in collaboration with the SABGSA to identify existing wells in the Basin that may be incorporated into the Basin Monitoring Network, enabling the SABGSA to fill existing data gaps identified in the Basin GSP.

GSI proposes to continue to provide recommendations to the SABGSA following the completion of quarterly monitoring events (see Task 2 below). One of the historically reoccurring recommendations that the SABGSA is implementing is the installation of additional transducers. There are several benefits to the use of transducers versus solely manual quarterly measurements. Transducers can collect data points at a predetermined frequency. The increased frequency in data points allows for identification of pump cycles if installed in a water

[1] As of the third quarter of 2024 groundwater level monitoring event (monitoring event), a total of 41 wells within the Basin monitoring network have access agreements. Although the SABGSA has an access agreement for well 2M1, monitoring of the well has been discontinued due to the lack of a sounding tube and the prohibitive expense of installing one. The SABGSA anticipates up to one additional well may be included for the fourth quarter of 2024 monitoring event.
[2] Five additional wells are planned to be outfitted with transducers during the fourth quarter of 2024 monitoring event.
[3] Historically, there have been instances GSI was unable to collect a representative depth to groundwater measurements at one or more wells during a quarterly monitoring event. In those cases, GSI has returned to the well as part of an additional mobilization within the authorized budget.
[4] Select GSI staff have active annual VSFB passes and are familiar with the check-in and check-out process for accessing the VSFB property wells. GSI can obtain temporary passes for additional GSI staff upon request.

supply well. This enables the team to better identify static water levels and aquifer properties, potentially still allowing for the collection of a representative data point even if the pump in a well included in the Monitoring Network had not been turned off prior to the monitoring event. Similarly, transducer data can enable identification of potential impacts, if any, from nearby groundwater pumping. Understanding of a well's radius of influence may allow for collaboration and optimization of pumping schedules. As described in Task 2, the SABGSA is required to report at least one groundwater level measurement for each well in the Basin Monitoring Network to the California Department of Water Resources (DWR) every 6 months, representing a spring water level measurement and a fall water level measurement. DWR has recently encouraged collection of monthly groundwater level measurements. Although monthly groundwater level measurements are not required per SGMA regulations, transducers would enable measurement of groundwater levels at this increased frequency without increasing the frequency of the Basin's currently quarterly monitoring.

Task 2 – Quarterly Groundwater Level Reporting and Upload Water Levels to the SGMA Portal

At the conclusion of each quarterly monitoring event, GSI will generate a brief technical memorandum (TM) that presents an overview of that quarter's monitoring activities and a table of the results of the groundwater level monitoring. The intent of these TMs is to regularly update the SABGSA on the status of the monitoring program. Additionally, the quarterly TMs memorialize important changes in the monitoring program that may influence data collection and can be reviewed at a later date. The quarterly TMs will be provided to SABGSA within 2 weeks after each monitoring event and provide the following information:

- Summary tables listing measured depth to groundwater and groundwater elevation in each monitoring well.
- Maps of the well locations in the monitoring network, including access status and updates for the addition or removal of wells from the network.
- Summary of noteworthy observations or differences between monitoring events, including, but not limited to, well access, changes in reference points, equipment repairs/replacements, and challenges associated with data collection.
- Recommendations for future monitoring events.

Per SGMA regulations and Water Code §10933(e)(2), the SABGSA is required to upload seasonal water level measurements that provide sufficient information to demonstrate seasonal and long-term trends in groundwater elevations. DWR has historically defined seasonal measurement periods as spring (January 1 to June 30) and fall (July 1 to December 31). The SABGSA is required to collect a minimum of one measurement per season, for all wells included in the Basin's Monitoring Network Module (MNM) on the SGMA Portal. These measurements are to be submitted to the SGMA Portal by July 1 for spring and January 1 for fall. Task 2 includes the upload of Basin water level measurements for spring 2025 and fall 2025 to the SGMA Portal by July 1, 2025 and January 1, 2026, respectively. Because GSI currently houses and maintains the SABGSA Data Management System (DMS), GSI is able to leverage the DMS by automating the population of water level data into the Basin SGMA Portal MNM reporting forms.

Formerly, results of the Basin quarterly groundwater monitoring were documented within an email and submitted to the SABGSA. GSI changed the format in 2022 from an email to a more formal brief TM. The content and analysis of the quarterly TMs can be modified upon request by the SABGSA (e.g., generation of hydrographs). Additional reporting costs may be warranted depending on the requested change in scope. SGMA regulations do not require specific reporting requirements except for the semi-annual reporting of groundwater levels (discussed above) and GSP annual reporting.

Task 3 – House and Maintain the SABGSA DMS

GSI developed the DMS in accordance with SGMA regulations (Article 3, Section 352.6 and Article 5, Section 354.40) during the preparation of the Basin GSP. A copy of the GSP table summarizing data in the DMS is included below.

Overview of Data Management System

Data	Description
Groundwater Levels	Water level data, well construction information, and salient information related to measurements
Groundwater Storage	Calculated annual change in groundwater in storage
Water Quality	Water quality well and station data as reported by the SWRCB DDW and ILRP[1]
Land Subsidence	Land subsidence data from the UNAVCO CGPS ORES and InSAR data
Interconnected Surface Water	Data related to the interconnected surface water sustainability indicator such as groundwater levels, stream gages, visual streamflow observations, and precipitation stations.
Water Use Data	Irrigation, municipal, and domestic water use estimates

Notes

[1] Water quality data is accessed through the California State Water Resources Control Board and the U.S. Geological Survey Groundwater Ambient Monitoring and Assessment Program Database

CGPS = Continuous Global Positioning System

DDW = Division of Drinking Water

ILRP = Irrigated Lands Regulatory Program

InSAR = Interferometric Synthetic Aperture Radar

SWRCB = State Water Resources Control Board

UNAVCO = University NAVSTAR Consortium

Pertinent data collected in Task 1 will be uploaded into the DMS. This includes all quality control checks, reconciliation of data to standardized benchmarks (e.g., all groundwater level data are in elevations using the same datum), and data formatting. Although GSI has provided a proposal to complete the subject scope of work and the Basin GSP Annual Report for water year 2024, which also includes a task to house and maintain the SABGSA DMS, the Task 3 budget presented herein indicates a cost specific to the subject scope of work.

Fee Estimate

Our team's proposed fee to complete the tasks is $62,454. The work will be performed on a time and materials basis for an amount that will not exceed the authorized budget unless approved by SABGSA. GSI will perform the work in accordance with GSI's Master Services Agreement with SABGSA dated December 14, 2023. The proposed budget is based on GSI's projected 2025 rates. This fee estimate includes a 10 percent markup on subconsultant work.

Tasks	Labor Hours	Labor Cost	Outside Services	Direct Expenses	Total
Task 1 – Quarterly Water Level Monitoring[1]	256	$41,420	$4,400[2]	$1,144[3]	**$46,964**
Task 2 – Quarterly Reporting and Upload Water Levels to the SGMA Portal	60	$10,210	$0	$0	**$10,210**
Task 3 – House and Maintain SABGSA Data Management System	32	$5,280	$0	$0	**$5,280**
Project Totals	**348**	**$56,910**	**$4,400**	**$1,144**	**$62,454**

Notes:

[1] Quarterly water level monitoring field efforts assume a 2-person team for 2 days.

[2] Task 1 Outside Services include the replacement of 2 transducers and data cables.

[3] Task 1 Direct Expenses include equipment use and milage for 4 monitoring events.

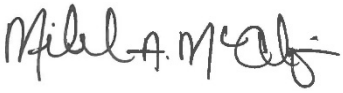
GSI has provided this budget estimate assuming that the wells are accessible, access issues do not delay the field staff, and equipment functions as intended. We will notify you if we encounter circumstances that cause us to spend more time in the field than budgeted. Based on the nature of the work, circumstances requiring a pump to be pulled and reset if a sounder gets stuck may occur. Since 2020, GSI has identified many of the problematic wells and will work to avoid these instances.

Schedule

GSI can coordinate with the SABGSA to determine an appropriate monitoring schedule or complete the proposed scope of work relatively consistent with the monitoring schedule completed during 2024. We estimate that each monitoring event will take 2 days in the field to complete, assuming that all site access approvals have been provided.

We appreciate this opportunity to continue to assist SABGSA in managing the Basin's shared groundwater resources. Please do not hesitate to contact us with questions about this proposal.

Sincerely,
GSI Water Solutions, Inc.



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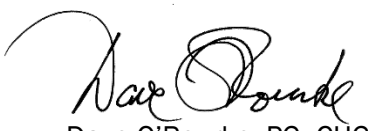

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