Groundwater Model Refinement and Calibration Project

WaterSMART: Applied Science Grants for FY2023
No. R23AS00446

Prepared For:
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Executive Summary

Date: October 17, 2023
City: Santa Clarita
County: Los Angeles
State: California

Applicant Name: Santa Clarita Valley Water Agency
Project Length of Time: 27 months
Estimated Completion Date: Sep. 2026
Located on a Federal Facility: No

The Santa Clarita Valley Water Agency (SCV Water) is pursuing its Water Reliance Initiative (WRI) which is focused on examining the linkages between pumping in the local groundwater basin and functional flows and ecology in the Upper Santa Clara River (USCR) as well as overall water supply reliability. The WRI will provide transparent and scientifically sound evaluations of the costs, benefits, and impacts associated with water resource management decisions by identifying SCV Water's current system conditions, conducting a vulnerability assessment, and identification of adaptation actions.

Funding from the Applied Sciences Grant Program will be used to perform various tasks related to calibrating, refining, and sensitivity testing the groundwater flow model (GWFM) which is one of the main water management tools for SCVWA. Specifically, these tasks will involve 1) testing and updating of the GWFM to better describe the recharge and storage paths in the Saugus Formation, a key aquifer in the basin, and the interaction between the Saugus Formation (Saugus) and the Alluvial system, 2) sensitivity testing on GWFM simulations of a potential Alluvial pumping concept that involves increasing pumping volumes in normal and wet years, and 3) sensitivity testing on GWFM simulations of a potential Alluvial/Saugus pumping concept that involves altering pumping schedules and/or implementing groundwater recharge in normal and wet years. This Project contributes to the goals of the Applied Sciences Program by developing and improving water management tools, the results of which will be used to bolster water supply reliability, improve flexibility in water operations, and optimize water management.

Technical Project Description

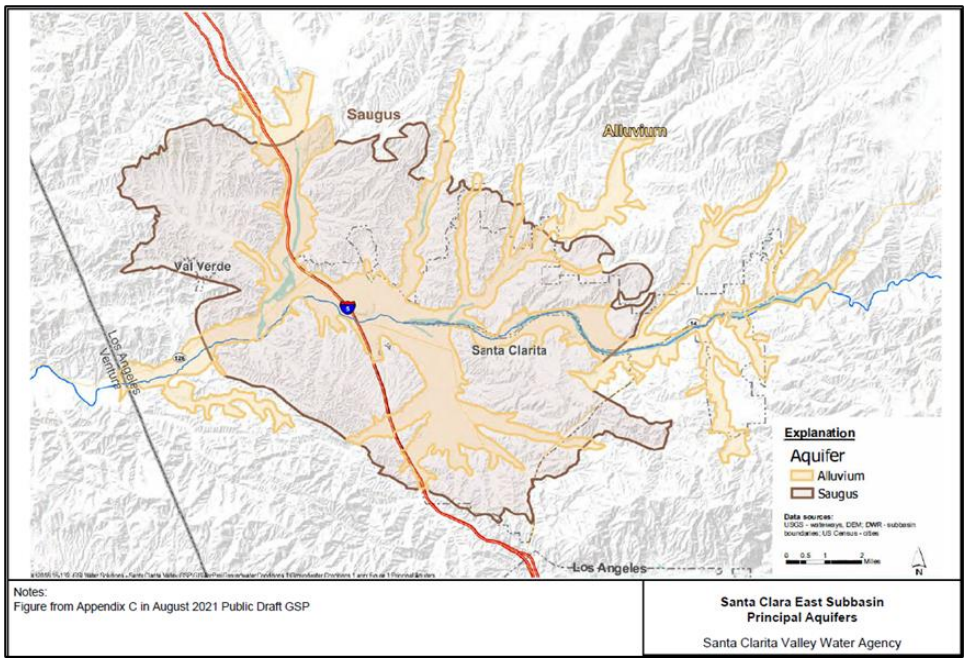
Detailed Project Description:

SCV Water is a **Category A** applicant. SCV Water serves an area of approximately 195 square miles and a population of approximately 289,000 people. SCV Water has a diverse portfolio of water supplies that consists of local groundwater (42% of average water supplied) from the Upper Santa Clara River Valley Groundwater Basin, East Subbasin (Basin), State Water Project (SWP) imported water which also includes banked water in dry years (58% of average water supplied), and recycled water (less than 1% of average water supplied). As climate change continues to bring unprecedented droughts to the State of California, SCV Water has been working to plan for a resilient and sustainable water future.

The overall SCV Water's resource portfolio is contained in the 2021 Water Supply Reliability Plan Update and the 2020 Urban Water Management Plan (UWMP). SCV Water has also been building various models to determine the future reliability of its aquifers and recharging needs. In 2021 and 2022, the current Santa Clarita Valley Groundwater Flow Model (GWFM) was developed to support preparation of Groundwater Sustainability Plan (GSP). The GWFM is a regional model encompassing the entire Basin and was calibrated to data collected through 2019.

The Basin is comprised of two aquifer systems, the Alluvium and the Saugus Formation (**Figure 1**). The Alluvium generally underlies the Santa Clara River and adjacent areas, including its several tributaries, to maximum depths of about 200 feet; and the Saugus Formation underlies practically the entire Upper Santa Clara River area, to depths of at least 2,000 feet.

Figure 1. Santa Clara East Subbasin Principal Aquifers



The current Groundwater Operating Plan is based on the concept that even though Alluvial Aquifer water supplies decline in dry periods, pumping from the Saugus Formation can be increased in dry periods to offset those reductions and result in increased groundwater production overall in periods of shortage on the SWP.

In addition, in 2023, SCV Water began conducting evaluations of the local groundwater and river system pursuant to the structure of California Environmental Flows Framework (CEFF). As part of that effort, a Habitat Sustainability Model (HSM) for the USCR was completed. The HSM can simulate habitat suitability in different reaches of the river for different focal and endangered species, such as Unarmored Three spine Stickleback and Santa Ana Sucker, based on water depth, velocity, and temperature. Pumping groundwater for municipal water supply can affect river flows (water depth, velocity, and temperature), and in turn influence habitat suitability. Similarly, discharges of wastewater into the river system increase flows in the system, which affects river water quality and quantity.

These efforts are being carried out under the umbrella of SCV Water's Watershed Resilience Initiative (WRI) to address water supply system, ecosystem, and groundwater system resilience, in alignment with State policies and goals. The initiative is focused on examining the linkages between pumping in the local groundwater basin and functional flows and ecology in the USCR as well as overall water supply reliability by evaluating the water resources portfolio of the agency and the ecological values of the watershed as interrelated systems.

To advance the WRI and bolster SCV Water's water supply resiliency, SCV Water has been and will continue to perform additional monitoring and testing to further refine and calibrate the

GWFM and multiple runs of the model to test single variable changes in operating strategy or changed hydrology. In addition to GWFM refinement, the proposed new groundwater operating strategies will be run through the Water Supply Reliability Model to determine if they provide additional value to SCV Water's overall water supply reliability as well as the HSM to ensure there are no adverse impacts to environmental flows in USCR.

Avoiding significant impacts to terrestrial GDE's from groundwater pumping is one of the six measures for evaluating the sustainability of the basin's groundwater resources under the GSP. The CEFF is allowing a broader understanding of the Alluvial system functionality to create sustainable habitat for aquatic species during flood and extended drought events. Data for key refugia (area in which a population of organisms can survive through a period of unfavorable conditions, such as extended droughts) would be incorporated into the interpretation of groundwater model results to better improve the current understanding of the availability of additional groundwater in wet periods and understand how pumping during declining groundwater levels and near the nadir of extended droughts may affect these systems. The groundwater flow model would also be run to analyze new pumping and climate change scenarios.

This Project will use the latest version of the GWFM to test the sensitivity of different model parameters to several potential new groundwater pumping scenarios and future climate change scenarios and further refine and recalibrate the GWFM by incorporating data that is being gathered through ongoing and future aquifer testing to provide more robust planning analyses. The main goals and tasks of the Project are discussed in more detail below.

Goal 1: Testing and updating of the GWFM to better describe the recharge and storage paths in the Saugus Formation and the interaction between the Saugus Formation and the Alluvial system.

The 2020 UWMP identifies the Saugus Formation as a key water supply in the basin. Storage declines more slowly in drought conditions and appears to be sufficient to enable pumping of vitally important reserves of groundwater to sustain critical demands in SCV Water's service area during droughts. It is understood in concept that storage would exist in extended drought and that it would be largely restored in significant wet periods. With the drilling of new wells nearing completion west of Interstate 5, it will soon be possible to test aquifer parameters in the model and calibrate the model to these parameters (hydraulic conductivity and storage coefficients) in this area. The drilling program also provides an opportunity to update the lithologic representation of the Saugus Formation in the multiple model layers that simulate the Saugus west of Interstate 5, including identifying which layers may act as aquitards versus primary water-bearing zones at the new well locations.

Since the Saugus Formation both recharges the Alluvium in the upland portions of the basin and discharges to the Alluvium in the basin's lowland areas, understanding the interaction between the two systems under dynamic conditions are critically important. Creating a refined representation of these interactions will greatly improve SCV Water's capacity to refine an operating plan for the combined systems. Additionally, the Saugus Formation system drains to seeps and springs along the river that may be closely associated with refugia of tremendous importance. Enabling accurate representation of these interactions in the groundwater flow modeling simulations is a significant part of SCV Water's efforts to ensure that its Operating Plan is compatible with stewardship of the river. SCV Water has already taken its basin

groundwater model and incorporated a more refined definition of the Saugus hydrostratigraphy in a localized area in the central portion of the basin where a groundwater contaminant plume is present. Under this scope of work, this locally refined Saugus hydro stratigraphy will be geographically expanded using the lithologic data from the new production wells west of Interstate 5 and sub-regional and regional-scale surface and subsurface geologic mapping.

Besides improving the representation of the Saugus/Alluvial interface, work will be conducted to improve one of the key input tools for the model (a package that develops the groundwater recharge terms) and to improve certain aspects of the model's calibration.

- **Improvements to the Recharge Package.** The model currently uses a Visual Basic tool developed specifically for this Basin to define time-varying and spatially varying rates of recharge for input to the groundwater flow model, which are important terms throughout the Basin but are especially important in upland areas where recharge paths in the Saugus Formation begin. Although the tool has greatly facilitated the ability to calibrate the model over the years, it has limitations and deserves a modern upgrade to increase its flexibility and to make it easier to use for a variety of users. One significant limitation is that it is designed strictly for one version of the model grid and would require significant programming to adapt it to any new model grid that might be desired in the future. Among its other limitations, the tool is not visually based, which makes it difficult for those not intimately familiar with the basin to use, and it relies on an empirical rainfall-recharge relationship that is applied uniformly across the basin. Although rainfall (and subsequent aquifer recharge) is allowed to vary spatially and temporally, the actual mathematical function that translates rainfall rates into recharge rates does not vary spatially or with time in this tool. Expanding the tool's capability to allow the mathematical function to vary with space and time would provide flexibility and ease in conducting local-scale refinements to the model to further improve its calibration and its predictive capabilities. The scope of work for this task includes upgrading this tool to accommodate these features, provide greater usability through an improved user interface, and incorporate additional data sources for certain hydrologic terms (e.g., PRISM data for rainfall).
- **Calibration Improvements.** Besides the improvements described previously to the Saugus Formation parameters and the Saugus/Alluvial Interaction, work will be conducted to address two other aspects of the model's current calibration quality: its tendency to overpredict dry weather stream flows and groundwater elevation recovery rates in central portion of the basin following drought periods. Calibration efforts to date have focused on simulating historical hydrologic conditions, groundwater pumping, and land uses during the period of 1980-2022. For these 43 year-long simulation periods and the 10-day-long frequency for model solutions, the run times are several hours long, which to date has inhibited the use of automated inverse calibration methods (the PEST software). The proposed work will consist of designing up to three transient model simulations for shorter time periods and applying PEST to each to seek improvements in streambed conductance terms, aquifer parameters, and groundwater recharge rates from precipitation and stream flows. The PEST simulations will be designed not only to improve the model's post-drought calibration quality, but to provide information on parameter sensitivity that will then be used to guide sensitivity simulation tests conducted under Goals 2 and 3. The major activities for this goal include:
  - Develop a refined representation of the Alluvium-Saugus interaction under dynamic conditions.

- Geographically expand locally refined Saugus hydrostratigraphy using the lithologic data from the new production wells west of Interstate 5 and sub-regional and regional-scale surface and subsurface geologic mapping.
- Improve the Recharge Package to allow the mathematical function that translates rainfall rates into recharge rates to vary spatially and temporally to enhance the user interface.
- Improve calibration to better estimate streambed conductance terms, aquifer parameters, and groundwater recharge rates from precipitation and stream flows.
- Conduct reasonableness check of the model's calibration by rerunning pumping scenarios from the GSP and make further adjustments to the model if warranted.
- Develop 3D visualizations of the calibrated model.
- Develop report documenting the improvements to the model.

Goal 2: Sensitivity testing on GWFM simulations of a potential Alluvial pumping concept to increase pumping volumes in normal and wet years. To inform decision-making on long-term Alluvial pumping concepts currently under study by SCV Water, single-variable sensitivity tests of key GWFM parameters (streambed conductance, aquifer hydraulic conductivity) will be conducted for areas in and near the river and in adjoining areas where terrestrial GDEs are present. In Goal 2, the sensitivity tests will be conducted on a potential concept involving increasing Alluvial pumping volumes during normal and wet years, while also simulating future climate-change effects on groundwater recharge rates from precipitation and storm runoff in the USCR and its tributaries. The model output from the sensitivity tests will examine how groundwater/surface water exchanges across the Alluvial-surface water interface are affected by parameter sensitivity under these Alluvial pumping concepts and with climate change incorporated into the simulated background hydrologic conditions. The major activities for this goal include the following:

- Conduct single-variable sensitivity tests of key model parameters (streambed conductance, aquifer hydraulic conductivity) for areas in and near the river and in adjoining areas where terrestrial GDEs are present.
- Conduct sensitivity tests on a potential concept involving increasing Alluvial pumping volumes during normal and wet years, while also simulating future climate-change effects on groundwater recharge rates from precipitation and storm runoff in the USCR and its tributaries.
- Develop 3D visualizations of model testing results.
- Develop technical memorandum documenting the testing approach and findings.

Goal 3: Sensitivity testing on GWFM simulations of a potential Alluvial/Saugus pumping concept to optimize pumping schedules and/or implementing of further groundwater recharge in normal and wet years.

Prior evaluations of the Operating Plan conducted for the GSP demonstrated that the basin could sustain far greater pumping from the Alluvial system during very wet periods than at other times. Accordingly, under Goal 3, the same types of sensitivity tests described previously for Goal 2 will be conducted on potential pumping concepts in both the Alluvial Aquifer and Saugus Formation that involve different sequencing of wet/normal/dry year pumping schedules for the Saugus Formation in particular, with or without implementing groundwater recharge during normal and wet years.

Similar to the Alluvial system, in years following wet cycles, the Saugus Formation is discharging to the Alluvial system and river system at a substantial rate. Over a typical dry cycle, prior modeling suggests that the leakage from the system is many times the volume of water pumped from the system. The GSP Operating Plan specifies normal year pumping in the Saugus Formation at 11,100 AFY. Modest increases in pumping in the Saugus Formation, say up to 15,000 AFY, could potentially reduce reliance on SWP supplies in normal years without requiring new capital for wells in either the Alluvium or Saugus Formation system. Under this strategy, the additional groundwater pumped could potentially save water supplies in SCV Water's banking and exchange programs for use in dry years. Additionally, changing the pattern of Saugus Formation dry year pumping as described in the GSP (such as by prioritizing pumping during the first dry year and then scaling back pumping in subsequent years) can ensure access to water sooner in case unforeseen issues arise such as DWR specifying that SWP Article 56 carry-over water is unavailable for one or more years. This strategy of altering groundwater pumping schedules would likely incur no additional capital costs.

In the testing of alternative pumping strategies, the updated model from Goal 1 would be used to examine parameter sensitivity effects on groundwater levels and groundwater/surface water exchanges under multiple new operating strategies and the effects of these variances from existing plans. The sensitivity tests would then be repeated by including recharge projects that could conceptually store excess water from the SWP in wetter periods to increase groundwater supplies available to SCV Water under drought conditions.

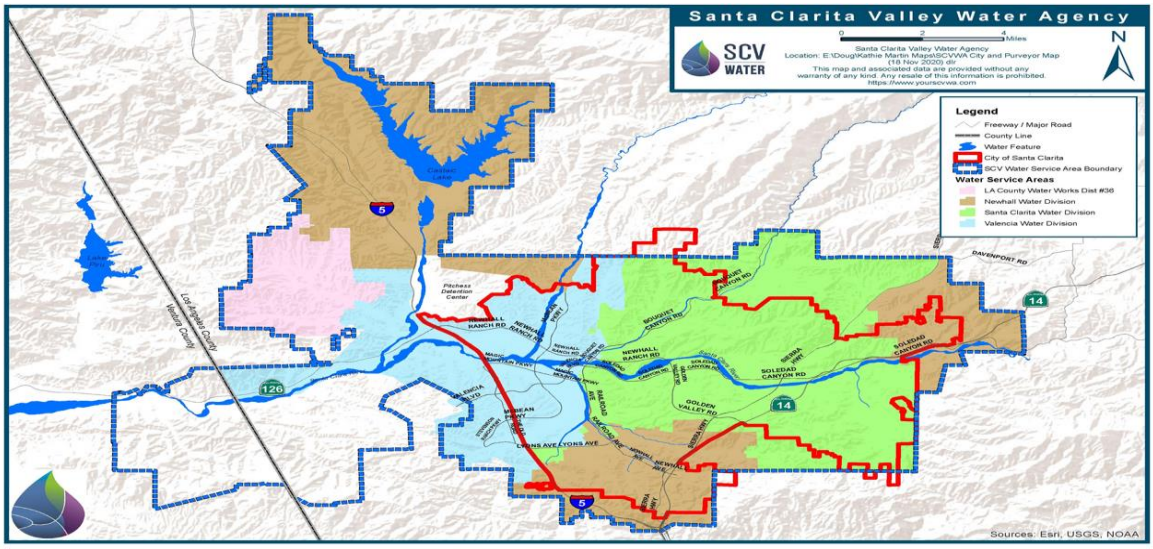
Besides providing insights to groundwater pumping management, the proposed model tests in Goals 1 through 3 will inform the need to fill gaps in field data, particularly as relates to the understanding of the sensitivity of the linkages between streamflows, groundwater levels in the Alluvium, and groundwater levels in the Saugus Formation (all three of which affect the direction and magnitude of vertical gradients that influence water exchanges). Monitoring programs involving possible new well installations, water level and streamflow monitoring, and aquifer testing will be developed during the course of conducting Goals 1, 2, and 3, with monitoring program implementation occurring separately from the scope of work for this grant. The major activities for this goal include the following:

- Conduct sensitivity tests on potential pumping concepts in both the Alluvial and Saugus Formations that involve different sequencing of wet/normal/dry year pumping schedules for the Saugus in particular, with or without implementing groundwater recharge during normal and wet years.
- Develop 3D visualizations of model testing results.
- Develop technical memorandum documenting the testing approach and findings.

Project Location

Since the Project will impact the entire SCV Water service area, the latitude and longitude for the SCV Water headquarters are used as a locator, which are 34° 26' 7.2492" N and 118° 31' 15.6432" W, respectively. The SCV Water service area is shown in **Figure 1.**

Figure 2. Project Location Map



Data Management Practices

Any spatially explicit data or tools developed in the performance of an award made under this NOFO must be developed in industry standard formats that are compatible with Geographic Information System (GIS) platforms. SCV Water certifies that the spatial data developed within the project will be developed under industry standard formats that are compatible with Geographic Information Systems (GIS) platforms.

Evaluation Criteria

Evaluation Criterion A— Water Management Challenge(s) (30 points)

Describe in detail the water management challenge is occurring within your project area. Describe the severity of the challenge to be addressed with supporting details. SCV Water is in the Santa Clarita Valley in northeastern Los Angeles County. This area is characterized by its arid climate and has been subject to prolonged drought conditions which has strained SCV Water's water supplies and its ability to meet growing demands. SCV Water provides water resources to a population of ~289,000 consisting of 73,542 water and recycled water connections with an estimated population of 420,000 residents at build out. SCV Water has been seeking projects to optimize its water supplies given the State of California's unprecedented challenges in water supply provisions, protection of natural ecosystems, and balancing statewide water demands. SCV Water is seeking to implement the Project to bolster the resiliency of its water supply system, local and statewide ecosystems, and groundwater system through a refined GWFM.

In an average year, SCV Water relies on a water supply portfolio comprised of local groundwater resources (42% of water supplied) from the Upper Santa Clara River Valley Groundwater Basin,

East Subbasin (Basin), the State Water Project (SWP) imported water which also includes banked water in dry years (58% of water supplied), and recycled water (less than 1% of water supplied). However, during dry years the contribution to the water supply portfolio from groundwater can significantly change. For instance, in 2020, 26% of total water supplied was from groundwater pumping, 1% was from recycled water, and 73% was imported water (including SWP, banked/exchange SWP programs, and other imported supplies). The extreme impacts of climate change on water availability in California have become clear in recent years. All scientific research, as well as actual current drought patterns, indicate the frequency, severity and duration of droughts are increasing coupled with intermittent strong wet years, as witnessed in 2023. This necessitates that SCV Water has an adaptive plan to manage its water resources over very wet and dry climate swings.

lThe SWP, a significant water resource for SCV Water, diverts water originating in the Sierra-Nevada Mountains in N. California to water users in Southern California. The most recent drought ended in 2017, followed by the current drought, starting in 2020. Snowfall, which is the primary source of SWP water, was at historical low levels until the 2023 winter. SWP Table A allocations fluctuate anywhere from 100% to 0%, depending on water levels of storage reservoirs, environmental needs of the state water system including the Sacramento – San Joaquin River Delta (Delta), and anticipated snowmelt runoff totals. In 2021 and 2022, SWP contractors received allocations as low as **5% of their annual entitlement** due to prolonged drought conditions**.** Although the snowpack is now high, recent trends indicate that frequent and severe droughts are now part of our climate. Therefore, SCV Water is proactively implementing the Project to be more prepared for an uncertain future due to climate change and associated reductions in SWP allocations. The Project will allow SCV Water to better manage its local supplies in conjunction with its imported surface supplies to ensure a sustainable water future that balances the health of the natural environment with the water needs of the area's residents.

To minimize its reliance on the SWP and other imported water supplies, SCV Water is bolstering its groundwater supplies from local groundwater basin to improve its water supply resiliency while protecting ecological values in the USCR. Groundwater produced from a locally sustained source gives SCV Water the highest degree of operational flexibility considering this source is available every year when compared to the SWP. A well-managed groundwater basin will provide SCV Water greater flexibility for managing sudden and prolonged shortages in water supplies.

SCV Water overlies the Basin, which is classified as a high priority subbasin under the California Sustainable Groundwater Management Act (SGMA). SGMA requires high and medium priority basins to develop and adopt GSPs to guide water managers to use the groundwater source sustainably. During dry years, SCV Water increases its groundwater pumping by 4,200 – 19,200 AFY to account for a drop in SWP Table A allocations. As dry years increase in frequency, groundwater recharge via precipitation decreases while SCV Water's groundwater pumping increases to bridge the gap due to dwindling imported water supplies. This has a double negative impact on the groundwater aquifers considering water is being withdrawn without an equal amount of recharge. SCV Water is implementing the Project to increase its water supply operational flexibility and transparency, which will ensure SCV Water customers have access to reliable, sustainable, and resilient water resources for generations to come.

Describe the concerns or outcomes if this water management challenge is not addressed? The recurrence of prolonged droughts is predicted based on climate change impacts, recent trends and

the currently best available science. Reliance on SWP imported water in significant amounts is not a sustainable solution currently and will only worsen over the future as statewide demands increase and the statewide water supplies drop. Therefore, maintaining a sustainable local water supply is one of the most viable ways to meet local demands. However, the local water supply in the form of groundwater must be fully understood to maintain its current and future health and availability. The Project, through the GWFM updates and refinements will be used to predict aquifer responses with future operations reflecting changing conditions, including increase in water pumping in dry years up to 35,000 AFY (from historical high of approximately 15,000 AFY), and changes in groundwater recharge due to changes in land use and precipitation/evaporation via climate change.

If the Project is not implemented, SCV Water will not be able to improve the GWFM which is the main management tool that allows accurate understanding of local groundwater water supply, nor enhance current modeling capabilities required to manage its water resources resiliency and sustainably. As mentioned in greater detail above, the increasing variability in SWP allocations, ecological impacts of dwindling water supplies in the Delta (source of SWP supplies), SGMA requirements, and SCV Water's obligation to provide clean, reliable, and sustainable water supplies to ~289,000 residents in its service area, this project is integral to addressing these challenges. SCV Water's planning to adapt to uncertainties will avoid future reductions in water supply reliability and increase its ability to meet ecological objectives.

1. *Explain how your project will address the water management issues identified in your response to the preceding bullets and provide support for your response.*

a. Water supply reliability: The updated GWFM will provide more accurate groundwater modeling capabilities for SCV Water to maximize their groundwater pumping while maintaining ecological flows in the USCR avoiding significant impacts to terrestrial GDEs. Having this knowledge will allow SCV Water to plan for a diverse water supply portfolio with multiple pathways for achieving water supply reliability in the face of uncertainties including different future climate change outcomes. Waiting for weather events to occur to apportion the water supplies is not a good option and may inevitably result in water shortages. Furthermore, the information will allow SCV Water to properly direct its limited financial resources towards the right investments in capital projects and conservation programs.

b. Management of water deliveries: With the improved information and modeling capabilities produced by the Project, SCV Water can more effectively manage the conjunctive use of its local and imported water deliveries by enhancing understanding of its local groundwater supply system. The new system will analyze SCV Water's water supply portfolio comprehensively to enable a more wholistic management approach in real time and on a long-term basis, resulting in more cost-effective water management practices. Use of less expensive supplies will reduce SCV Water's water costs and minimize rate increases for its customers, resulting in improved management of fiscal resources.

c. Water marketing activities: This project will improve access to more accurate water resources modeling to inform water management decisions and also allow SCV Water to better facilitate water marketing activities and opportunities within and outside the Basin.

d. Drought management activities: The Project will provide state of the art hydrologic information (concerning groundwater storage and banking capabilities) provided by the updated GWFM. This will improve SCV Water's ability to manage drought and its impacts to water supplies. SCV Water maintains a Water Shortage Contingency Plan with robust mitigation

measures that can be implemented during various scenarios of drought conditions. The Project will generate scientific information necessary to manage water from its available sources. For example, SCV Water will be able to maximize groundwater storage and bank water during wet years for use during dry years, which will also increase drought resiliency upon completion of the Project.

e. Conjunctive use of ground and surface water: Three of SCV Water's main sources of water are imported SWP water, local groundwater, and banked/exchanged water. Balancing the allocations between these three sources is crucial to a reliable water future for SCV Water. The Project will provide SCV Water management with more accurate groundwater modeling capabilities which will enable efficient planning and management for conjunctive use between groundwater and surface water resources. The updated GWFM will allow SCV Water to evaluate the benefits of new groundwater operating profiles, improve conjunctive management of surface water and groundwater, and evaluate the need for new investments in water supply programs against investments in local groundwater development.

f. Water rights administration: One of the main deliverables of the Project is performing model calibration and refinements to determine the impacts of aquifer pumping on stream flows within the USCR. Once the Project is implemented, SCV Water will be able to identify a pumping strategy which accounts for SCV Water's regulatory and feasible pumping limitations to meet riparian habitat requirements.

g. Ability to meet endangered species requirements: The CEFF analysis that SCV Water is currently undertaking identifies key linkages between different functional flow components of the annual hydrograph and the ecological needs of several State or Federally listed or endangered species in the USCR and its riparian corridor. The CEFF Framework approach is designed to support the development of environmental flow recommendations including instream flow criteria that balance ecological, management and regulatory goals, and human and ecological needs for water. Additionally, avoiding significant impacts to terrestrial GDE's from groundwater pumping is one of the six measures for evaluating the sustainability of the basin's groundwater resources under the GSP. The Project will refine the GWFM to enable SCV Water to incorporate key environmental flows and GDE data in the interpretation of its results to maximize its production from its local groundwater wells while meeting ecological objectives and thereby reduce its reliance on imported water, including that sourced from the SWP, while meeting ecological objectives in the USCR for sensitive and endangered species.

h. Watershed Health: Data concerning key refugia will be incorporated into the interpretation of the updated GWFM model results to better improve the current understanding of the availability of additional groundwater in wet periods and understand how pumping during declining groundwater levels and near the nadir of extended droughts may affect these systems. Additionally, the updated GWFM will have an improved recharge package that will better define time-varying and spatially varying rates of recharge for input to the groundwater flow model, which are important terms throughout the basin but are especially important in upland areas where recharge paths in the Saugus Formation begin. As mentioned above, SCV Water began conducting evaluations of the local groundwater and river system pursuant to the structure of the state's CEFF. As part of that effort, an HSM for the USCR was completed, which simulates habitat suitability in different reaches of the river for different focal and endangered species based on water depth, velocity, and temperature. The Project will provide refinements to the GWFM with respect to the Saugus Formation, Alluvium, and USCR, which will improve

watershed conditions and avoid action that might result in detrimental effects to the health of the local watershed.

i. Conservation and efficiency: The Project will enable SCV Water to make more informed groundwater operational decisions for greater system efficiency. It will optimize and make efficient use of groundwater supplies to reduce reliance on imported water. Additionally, the Project will enable SCV Water to make more informed decisions on how much water to store in its underlying aquifers during normal and wet years to expand its groundwater supplies. In this manner, the Project will support and promote conservation of vulnerable imported water supplies, especially during dry years.

Evaluation Criterion B—Project Benefits (30 points)

Describe how the need for the project was identified. Was the proposed project identified using a collaborative process with input from multiple and diverse stakeholders? The State of California is facing unprecedented challenges in water supply, protection of natural ecosystems, and balancing the needs of diverse water users. With the recurrence of droughts and their increasing intensity and duration, water sustainability and response to drought have become the focal point of planning documents developed by SCV Water. In 2019, the SCV Water Board adopted a set of Watershed Stewardship Objectives to serve as important guiding principles formulated to provide definition, focus, and direction for the WRI. This direction requires providing a transparent and scientifically sound evaluation of the costs, benefits, and impacts of complex interrelated actions for evaluation of the water resources portfolio of SCV Water and the ecological values of the watershed as interrelated systems.

Also, Reliability Planning and Drought Risk Assessment have been part of SCV Water's prior efforts such as the 2020 Urban Water Management Plan (UWMP), which assesses and forecasts SCV Water's future water supply reliability and demands, 2020 Water Shortage Contingency Plan (WSCP), which identifies water conservation tiers during times of prolonged drought, and the Santa Clarita Valley Groundwater Sustainability Plan (SCVGSP), which identifies implementation actions to achieve groundwater sustainability in the Basin. This planning was achieved with the involvement of the community, elected officials, agencies with regional or wider jurisdiction and neighboring water agencies. All these planning documents specify improved water management and transparency as a necessary action to achieve sustainable and reliable water supply management, which this Project addresses.

SCV Water has encouraged the active involvement of diverse social, cultural, and economic elements of the population and community throughout the SCV Water service area prior to and during preparation of all its planning documents. Interested public agencies and other stakeholders were also informed about the development of the plans and the schedule of public activities. Notices of workshops are regularly published in the local press and on the SCV Water website. Copies of the planning documents are also made available at the SCV Water office and website and sent to the City of Santa Clarita, the County of Los Angeles, and other interested parties, which include a multitude of public agencies, elected bodies, non-profit and advocacy groups and others. SCV Water staff also convened meetings with various parties to gather data concerning planned development and the probable implementation of approved private development. It is worth noting that SCV Water has contracted with local public outreach and stakeholder engagement firms as needed to coordinate preparation of the UWMP, WSCP, and SCVGSP with the local community and stakeholders and will do the same for this Project.

As the project is implemented SCV Water will continue seeking stakeholder involvement namely from the SCV Water Board of Directors, a Technical Advisory Committee (TAC), and Community Stakeholders. The Board of Directors represents the SCV Water organization. The TAC will be comprised of SCV Water personnel and other technical experts to provide input on any technical work required for the Project. The Community Stakeholders refer to all other vested parties either served by SCV Water or impacted by SCV Water's actions, which will be invited to participate in engagement meetings, receive newsletters on the Project's progress, and other forms of media to provide feedback as the Project progresses.

Describe how the tool, method, or information will be applied and when will it be applied. Will the tool or information be used immediately or will additional work need to be done before the tool will be used? The Project will provide updated information regarding the hydrogeologic properties of the Saugus Formation, Alluvial aquifer, and USCR streambed, which will be used to calibrate and refine the GWFM to determine optimum pumping scenarios. This is one of the earlier steps in implementing the broader Watershed Resilience Initiative. The Project will update the GWFM to better depict actual conditions within the aquifer-stream system. The updated GWFM will be immediately used to develop water operating plans to properly allocate water resources for various scenarios, which will be valid for many years to come. The WRI is an ongoing process that will constantly be updated and revised as hydrologic conditions fluctuate with climate change, new information is gathered, and regulations evolve.

Describe, in detail, the extent of benefits that can be expected to occur upon implementation of the project, and provide support for your responses. The Project's objectives and related benefits are detailed below. The deliverables on how each benefit will be achieved are listed under the deliverables section.

- Test and update the GWFM to better identify optimal groundwater recharge and storage practices to sustainably manage the Saugus Formation and Alluvial aquifer. This will be accomplished by performing improvements to the recharge package and calibration. This will enable SCV Water to optimize its groundwater and surface water uses during dry, normal, and wet years to ensure that water deliveries to its customers are met without jeopardizing local riparian and aquatic habitats.
- Better estimate the volume of Alluvial pumping through identification of sustainable and optimal pumping strategies during normal and wet years. This will be accomplished by performing sensitivity testing and calibrating the GWFM based on the newly acquired data currently being collected. This will allow SCV Water to optimize its use of the Alluvial aquifer while minimizing impacts to the riparian and aquatic habitats within the USCR. This will benefit the customers of SCV Water by optimizing its water supplies and will benefit the riparian and aquatic ecosystems within USCR.
- Sensitivity testing to identify strategies to offset declines in available groundwater supplies within the Alluvial and Saugus systems such as altering pumping schedules and/or implementing groundwater recharge in normal and wet years. This will be accomplished by testing and updating the GWFM to identify optimal pumping strategies based on the updated aquifer and stream flow data. This will enable SCV Water to optimize its pumping schedules and recharge practices which will further improve the resiliency of SCV Water's water supplies.
- The benefits above will result in a sustainable water supply that maintains the health of the Basin and the USCR ecosystems that rely on an adequate water supply.

- The information from the Project will better prepare SCV Water to adapt to and manage the high variability of imported water supplies.
- The information from the Project will allow SCV Water to properly invest its limited financial resources in the right investments in capital projects and conservation programs.
- As part of our collaborative approach to manage the basin, the model and the data used would be available to other stakeholders in the region to help address other needs.

Who will use the tool or data developed under this proposal and how will they benefit from the project? Support could include but is not limited to letters from stakeholders expressing support for the project and explaining how they will benefit. The Project will be utilized by SCV Water and their consultants to manage water supplies to support the watershed social, economic, and environmental health. This Project will allow SCV Water personnel to make more informed decisions regarding water management decisions and meet the water demand requirements for SCV Water customers and environmental needs. The information provided by the GWFM will be provided to qualified organizations such as, but not limited to, Santa Clarita Valley Groundwater Sustainability Agency (SCVGSA), California Department of Water Resources (DWR), California State Water Resources Control Board (SWRCB), and other water management agencies within the Basin.

The Project will provide benefits to SCV Water and its stakeholders by increasing the accuracy and transparency of water supply data, which will enable SCV Water personnel to update its GSP operating plan and UWMP and make more informed decisions with available annual water supplies. For example, during times of high runoff, such as the 2022/23 rainy season, SWP, local surface water, and groundwater data will be provided to enable SCV Water to either store excess water in its groundwater banking programs or recharge (through in-lieu or active recharge) excess surface water into the local groundwater basin to be extracted during the next prolonged drought period when surface water supplies are curtailed.

How will the project improve water management decisions? Visualization platforms provide a large number of outputs that proposed models produce in a digestible format for SCV Water to utilize for its decision-making process. As mentioned, the Project will allow SCV Water to 1) update the GWFM to better identify optimal groundwater recharge and storage practices to sustainably manage the Saugus Formation and Alluvial aquifer, 2) increase the average volume of Alluvial pumping through identification of sustainable and optimal pumping strategies during normal and wet years, and 3) identify strategies to offset declines in available groundwater supplies within the Alluvial and Saugus systems such as altering pumping schedules and/or implementing groundwater recharge in normal and wet years. This will allow for the coordinated management of imported and local water supplies, which is critical to achieving water supply reliability. Integration of future local groundwater operations into the portfolio through an enhanced groundwater operating plan seeks to use more fully the storage potential of the Basin.

Describe if the results of your project will be applicable elsewhere. What additional work would need to be done to make the project results transferable to others? Several other agencies will directly benefit from the valuable data that the updated model will provide. These agencies include but are not limited to the California Department of Water Resources, which manages the SWP and partner agencies, the Buena Vista Water Storage District, and the Rosedale-Rio Bravo Water Storage District, with whom SCV Water has water exchange agreements. There is no additional work needed beyond the listed scope of work enabling SCV Water to share data with other relevant water agencies.

The Project will provide updated information and modeling capabilities regarding underlying aquifer hydrogeologic characteristics, local streams, and SWP allocations to refine and calibrate the GWFM. SCV Water personnel will ensure that all procured data and information under this Project can be shared with any relevant agencies such as the Santa Clarita Valley Groundwater Sustainability Agency, which is charged with implementing the Upper Santa Clara River Valley East Basin GSP.

Additionally, SCV Water staff will seek to present the methodology, management approach, and outcomes at relevant industry conferences so that other agencies and practitioners can benefit from the lessons learned.

To what extent will the project address the water management challenges in E.1.1.? The Project will provide updated information regarding the hydrogeologic properties of the Saugus Formation, Alluvial aquifer, and USCR which will be used to calibrate and refine the GWFM to determine optimum pumping and recharge scenarios. Therefore, the Project will enable SCV Water to ensure water supplies are managed reliably and sustainably. Please refer to the response to Evaluation Criteria A above for detailed information on how this project will address water management challenges.

Explain how your project complements other similar efforts in the area where the project is located. The Project will provide updated information regarding the hydrogeologic properties of the Saugus Formation, Alluvial aquifer, and USCR, which will be used to calibrate and refine the GWFM to determine optimum pumping scenarios. The Project builds upon the existing GWFM that was updated in 2019 to support the Santa Clarita Valley GSA and the implementation of the GSP. The GWFM has been successful in implementing the GSP and the Project will be implemented with a similar methodology. The Project is regional in nature as it will analyze the entire Basin. These efforts are being carried out under the umbrella of SCV Water's Watershed Resilience Initiative (WRI) to address water supply system, ecosystem, and groundwater system resilience, in alignment with State policies and goals. The Project does not duplicate any existing efforts, but rather it builds on completed efforts and is the next step in the long-range and integrated planning process in which SCV Water has been engaged.

Evaluation Criterion C—Project Implementation (20 points)

Briefly describe and provide support for the approach and methodology that will be used to meet the objectives of the project. The main objectives of the Project include:

- Increase the average volume of Alluvial pumping through identification of sustainable and optimal pumping strategies during normal and wet years.
- Update the groundwater flow model to better identify optimal groundwater recharge and storage practices to sustainably manage the Saugus Formation and Alluvial aquifer.
- Identify strategies to offset declines in available groundwater supplies within the Alluvial and Saugus Formation systems such as altering pumping schedules and/or implementing groundwater recharge in normal and wet years.

Describe the work plan for implementing the proposed scope of work. The following is the estimated project schedule for the project with major tasks and subtasks identified. SCV Water is prepared to start the proposed tasks immediately upon Notice of Award of this grant request and completion of the grant agreement. SCV Water will retain industry experts to perform the work. The costs associated with each task can be found in the Project Budget section in this application.

Table 1. Estimated Project Schedule

Estimated Project Schedule			
No.	**Task/Milestone**	**Start Date**	**Completion Date**
1	**Task 1 – Testing and Updating the Groundwater Model**	**Jan. 2024**	**Aug. 2025**
1.1	Subtask 1 – Updating Groundwater Model Recharge Package	Jan. 2024	Nov. 2024
1.2	Subtask 2 – Saugus Hydrostratigraphic Refinements and Calibration Improvements	May 2024	Feb. 2025
1.3	Subtask 3 – Reasonableness Check on Future Simulations	Aug. 2024	May 2025
1.4	Subtask 4 – Model Improvements Report	Jan. 2025	Aug. 2025
1.5	Subtask 5 – 3D Visualization	Jan. 2025	Jul. 2025
2	**Task 2 – Sensitivity Testing of Potential Alluvial Pumping Concepts**	**Mar. 2025**	**Apr. 2026**
2.1	Subtask 1 – Model Sensitivity Testing	Mar. 2025	Feb. 2026
2.2	Subtask 2 – Technical Memorandum	Sep. 2025	Apr. 2026
2.3	Subtask 3 – 3D Visualization	Aug. 2025	Feb. 2026
3	**Task 3 – Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without AR**	**Nov. 2025**	**Sep. 2026**
3.1	Subtask 1 – Model Sensitivity Testing	Nov. 2025	Jul. 2026
3.2	Subtask 2 – Technical Memorandum	Feb. 2026	Sep. 2026
3.3	Subtask 3 – 3D Visualization	Feb. 2026	Aug. 2026

Provide a summary description of the products that are anticipated to result from the project. These may include data, metadata, digital or electronic products, reports, and publications. Note: using a table to list anticipated products is suggested. Table 2 below lists all of the deliverables associated with each task. Each task will result in a report or technical memorandum detailing the changes, findings, and other relevant information to the work performed on the GWFM as well as a 3-D visualization of the GWFM. The deliverable for this grant pursuit, will be a comprehensive report compiling all the reports from the described activities listed in more detail below:

Table 2. Project Products Summary

Product Title	Product Type	Description
Task 1 - Testing and Updating the Groundwater Model		
Model Improvements Report	Final Report will include all the below sub sections	Develop section within final report documenting the improvements to the model.
GWFM 3-D Visualization	(Visualization) Model and PDF files as well as scripts used for generating the visualizations	Develop 3D visualizations of the calibrated model to be incorporated into final report
GWFM Updated Model	Model files including input and output, and scripts to automate pre- and post-processing	Updated GWFM model with improvements
Task 2 - Sensitivity Testing of Potential Alluvial Pumping Concepts		

Sensitivity Testing of Potential Alluvial Pumping Concepts - TM	Final Report will include all the below sub sections	Develop section within final report documenting the testing approach and findings.
GWFM 3-D Visualization	(Visualization) Model and PDF files as well as scripts used for generating the visualizations.	Develop 3D visualizations of model testing results.
Task 3 - Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without AR		
Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without AR - TM	Final Report will include all the below sub sections	Develop section within final report documenting the testing approach and findings.
GWFM 3-D Visualization	(Visualization) Model and PDF files as well as scripts used for generating the visualizations.	Develop 3D visualizations of model testing results.

Who will be involved in the project as project partners? What will each partner or stakeholder's role in the project be? How will project partners and stakeholder be engaged in the project and at what stages? SCV Water will be the primary project implementing agency and will seek input during the Project development and implementation process. As the project is implemented, SCV Water will seek stakeholder involvement namely from the SCV Water Board of Directors, the TAC, and Community Stakeholders. The Board of Directors represents the SCV Water organization. The TAC will be comprised of SCV Water personnel and other technical experts to provide input on any technical work required for the Project. The Community Stakeholders refers to all other vested parties either served by SCV Water or impacted by SCV Water's actions, which will be invited to participate in engagement meetings, receive newsletters on the Project's progress, and other forms of media to provide feedback as the Project progresses. SCV Water has already begun communication with regional stakeholders such as the Santa Clarita Valley Groundwater Sustainability Agency (SCVGSA) and other water users within the Basin who have shown support and/or expressed interest in learning about the Project. SCV Water will make all procured data, information, and model refinements available to the SCVGSA to ensure that SCVGSA has access to all tools to sustainably manage the Basin.

Identify staff with appropriate credentials and experience and describe their qualifications. Describe the process and criteria that will be used to select appropriate staff members for any positions that have not yet been filled. Describe any plans to request additional technical assistance from Reclamation or via a contract. Please answer the following: SCV Water has a dedicated an experienced team consisting of Najwa Pitois, Ph.D., P.E. (Senior Water Resources and Data Scientist), Rick Viergutz (Principal Water Resource Planner), Ali Elhassan, PhD., P.E. (Director of Water Resources), and Steve Cole (Assistant General Manager) that are assigned to the development of the proposed project components. Cheryl Fowler (Management Analyst II), Margaret Aragon (Administrative Technician) will be responsible for project reporting and management. The above-mentioned SCV Water staff members have extensive experience in implementing similar hydraulic modeling related projects and other forecasting tools. Additionally, SCV Water will contract with professional consultants/subject matter experts to

assist in the development of GWFM and provide the deliverables mentioned in the Project Description.

Have the project team members accomplished projects similar in scope to the proposed project in the past either as a lead or team member? Yes, as mentioned above, SCV Water has led many regional and multi-jurisdictional planning efforts. In addition, the internal personnel have developed and maintained the current groundwater flow model and have been responsible for development of other watershed models. The SCV Water's staff members have been responsible for development of several key planning documents such as the 2019 Groundwater Flow Model developed as part of the SCVGSA's GSP implementation. SCV Water will contract for services of subject matter experts/consultants to provide specialized work on the three tasks outlined in the Project Description.

Is the project team capable of proceeding with tasks within the proposed project immediately upon entering into a financial assistance agreement? If not, please explain the reason for any anticipated delay. Yes, as noted above, SCV Water has an experienced team of professional scientists, engineers, planners, analysts and administrators led by the Director of Water Resources that are thoroughly knowledgeable about the service area and are proficient in their discipline and responsible for delivering the necessary project components. SCV Water has a capital improvement program of over $123 million for FY2023/24 and $148 million for FY2024/25 comprised of multiple planning and implementation projects that are successfully completed on an annual basis within budget and schedule. The above team members are highly capable of proceeding with managing the project, the selected consultant(s), and the necessary tasks to successfully complete the proposed project. Evaluation Criterion D— Dissemination of Results (10 points)

Describe how the tools, frameworks, or analyses developed under the proposed scope of work will be disseminated, communicated, or made available to water resources managers who may be interested in the results. If the applicant is the primary beneficiary of the project, explain how the project results will be communicated internally, and to interested stakeholders and interested water resources managers in the area, if appropriate. The deliverables of this Project will provide updates to the existing GWFM which will be available through SCV Water's internal computer network. Considering the sensitivity of this information, it will not be publicly available. This information, will however, be provided to qualified organizations such as, but not limited to, SCVGSA, DWR, SWRCB, and other water management agencies. The Project deliverables will be communicated to the SCV Water Board of Directors during regularly scheduled public meetings. Internal stakeholders at SCV Water include the engineering and finance departments (for budgeting/planning purposes regarding imported water purchases vs. groundwater production). SCV Water has already begun communication with regional stakeholders such as SCVGSA and other water users within the Basin who have shown support and/or expressed interest in learning about the Project. Letters of support from some of these agencies including the Santa Clara River Conservancy, TreePeople (an environmental non-profit operating in Santa Clara River Valley), the City of Santa Clarita, and the University of California, Santa Barbara, are included in Section 6 of this application. SCV Water will share the Project results and the positive impacts on management of the Basin. with these agencies.

The deliverable will be a final report organized into sections for each major goal/task describing work performed and major findings. The report will also include visualizations to aid in

interpretation and presentation of the results. SCV Water staff will be educated on the results and findings and the updated GWFM will be integrated into SCV Water's on-premises server systems so that future work on the groundwater basin will use the same model version.

If the applicant is not the primary beneficiary of the project (e.g., universities or research institutes), describe how project results will be communicated to project partners and interested water resources managers in the area. SCV Water is the Applicant and primary beneficiary of the Project. However, it will benefit numerous other local and regional entities, including all members of the SCVGSA which can use the wealth of information resulting from the Project in their local and regional planning efforts. The Project will allow SCV Water to better manage its increasingly scarce imported water supplies and its groundwater resources, benefiting all of these stakeholder organizations to some degree. As previously noted, SCVGSA is very interested in the Project and the results of this effort will be coordinated for regional use. Project results will be provided to all stakeholders identified in the Groundwater Sustainability Plan which includes representatives from Larger Water Pumpers, Medium Water Pumpers, Small Water Pumpers, Environmental Groups, Businesses, Residences, Media, SCV Water, Los Angeles County, L.A. County Waterworks District No. 36, the City of Santa Clarita, and other local cities. Project results and data will be shared with stakeholders and other water resources managers with secure electronic access to the GWFM and associated data sources such as the University of Santa Barbara that have been conducting research on the Santa Clara River, and City of Santa Clarita that is involved in Arundo management.

Describe how the project results will be shared with other water managers in the West that could use the information to support water management objectives. One of the main benefits of this Project is the enhanced coordination with SCVGSA and other vested local water management agencies, to improve regional monitoring and planning. The Project will serve as a "single source of truth" for groundwater and surface water flow information going forward. Results will be shared with other managers in the West via secure electronic access. In addition, SCV Water managers and staff often participate in local and regional technical conferences, workshops and seminars and will be able to present the result of their effort in advancement of the water management supplies if the opportunity arises.

Evaluation Criterion E — Presidential and Department of the Interior Priorities (10 points)

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity. For example, does the project help communities respond to or recover from drought or reduce flood risk? This Project aligns directly with the goals of E.O. 14008 by providing updated information regarding the hydrogeologic properties of the Saugus Formation, Alluvial aquifer, and USCR stream which will be used to calibrate and refine the GWFM to determine optimum pumping scenarios. Therefore, the Project will ultimately bolster SCV Water's climate change induced drought resiliency. SCV Water has been implementing planning and forecasting projects, such as the Project, in unison with climate resilience infrastructure projects such as groundwater well development, recycled water use expansions, automated meter infrastructure, and other climate change induced drought resiliency projects.

This Project will provide SCV Water with the ability to more accurately plan and use its water supplies in the face of increasingly severe, longer duration and intense droughts brought on by our changing climate. For example, SCV Water receives imported water supplies from the SWP. In 2014 the SWP Table A allocation was set at 5%, which was the lowest allocation ever issued since inception. Since then, in 2021 and 2022 there have been two more years of 5% SWP Table A allocations due to lack of winter precipitation and prolonged drought conditions perpetuated by climate change. SCV Water responded in these years by increasing groundwater pumping. SWP hydrology can be extremely variable from year to year. In 2023 due to the historic rain events, Table A allocations are now set at 100%, which means SCV Water will be able to claim its full Table A allocation for the first time since 2006[1]. This high amount of imported water availability coupled with the updated GWFM (the Project) will allow SCV Water to use its imported water for immediate demands and to perform in-lieu recharge to its depleted aquifers thereby increasing its groundwater reserves to be used for future prolonged drought periods when imported water supplies are scarce. Therefore, this Project will allow SCV Water to optimize its resources and thus provide drought resiliency for SCV Water's water supply portfolio as climate change impacts continue to threaten SCV Water's potable water supplies.

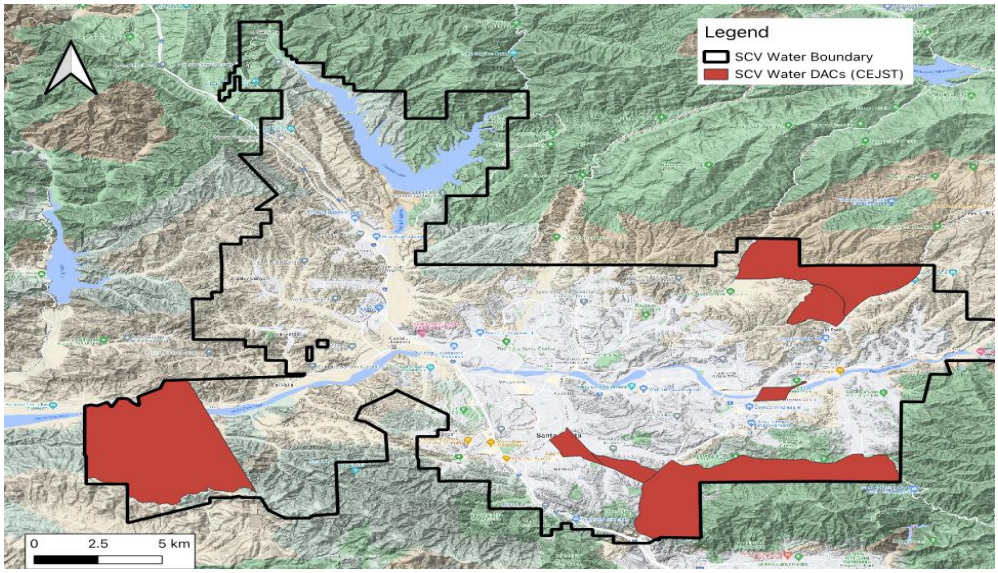
How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? Please estimate the extent to which the project will build resilience to drought and provide support for your estimate. To advance the WRI and achieve SCV Water's water supply resiliency, the Project will implement an updated and more refined GWFM which will be utilized by SCV Water indefinitely until future data and software emerge. This Project will continue to provide accurate water resource forecasting and management capabilities which SCV Water personnel will be able to utilize to perform 30-year planning scenarios. The model will be continually updated as new data becomes available. .he improvement in the groundwater model will enhance our ability to manage the groundwater resources of the basin which is one of the important supplies to the valley residents especially during drought.

Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities.

Please use the Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool, available online at Explore the map - Climate & Economic Justice Screening Tool (geoplatform.gov) to identify any disadvantaged communities that will benefit from your project. As per the Climate and Economic Justice Screening Tool, there are seven census tracts considered disadvantaged in SCV Water's service area. Since this Project will impact the ability of SCV Water to bolster its water supply's drought resiliency, all persons within SCV Water's service area that are within a DAC will benefit from the Project. See Figure 2.

[1] California Department of Water Resources, State Water Project Table A Allocation (1996-2023), https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/SWP-Water-Contractors/Files/1996-2023-Allocation-Progression-rev3-042023.pdf

Figure 3. SCV Water Climate and Economic Justice Screening Tool DAC Map



If applicable, describe how the project benefits those disadvantaged or underserved communities identified using the tool. For example, does the project increase reliability of water supplies, improve water quality, provide economic growth opportunities, improve, or expand public access to natural areas or recreation, or provide other benefits in a disadvantaged or underserved community? The Project will benefit the entire SCV Water service area by providing increased reliability of water supplies, which will foster economic growth opportunities among other indirect benefits. These benefits will be realized by the entire SCV Water service area, which includes DACs. Water is a resource essential to all aspects of human life from drinking, maintaining hygiene, to supporting businesses and industry. The Project will ensure the availability of adequate water supplies every year, which is crucial for disadvantaged communities living within the SCV Water service area.

SECTION 2: PROJECT BUDGET

Funding Plan and Letters of Funding Commitment

SCV Water will fund the entire non-federal cost share portion of the Project through monetary contributions. As shown in the draft resolution in Section 7 of this application, SCV Water is committed to providing the remaining matching funds to complete this project. Table 3 below shows the project funding sources and the requested Reclamation funding amount.

Table 3. Project Funding Sources

FUNDING SOURCES	AMOUNT	% of Project Cost
Non-Federal Entities		
SCV Water	$363,374	50%
Non-Federal Subtotal	**$363,374**	**50%**
Other Federal Entities		
None		
Other Federal Subtotal	$-	-%
REQUESTED RECLAMATION FUNDING	**$363,374**	**50%**

Budget Proposal

The below table represents the estimated project costs associated with completing the three tasks associated with this project. The budget narrative is located directly below this table.

Table 4. Estimated Project Budget

Budget Item	Computation		Quantity Type	Total Costs
	$/Unit	Quantity		
Salaries and Wages				**$ 111,586**
Senior Water Resources and Data Scientist	$ 99.55	566	Hours	$ 56,347
Principal Water Resource Planner	$ 115.23	283	Hours	$ 32,610
Management Analyst II	$ 70.71	30	Hours	$ 2,121
Administrative Technician	$ 50.27	15	Hours	$ 754
Assistant General Manager	$ 170.21	42	Hours	$ 7,149
Director of Water Resources	$ 140.06	90	Hours	$ 12,606
Fringe Benefits				**$ 46,763**
Data Scientist	$ 41.70	566	Hours	$ 23,602
Principal Water Resource Planner	$ 48.27	283	Hours	$ 13,659
Management Analyst II	$ 29.57	30	Hours	$ 887
Administrative Technician	$ 21.05	15	Hours	$ 316
Assistant General Manager	$ 71.89	42	Hours	$ 3,019
Director of Water Resources	$ 58.67	90	Hours	$ 5,280
Travel				
N/A				
Equipment				
N/A				
Supplies/Materials				
N/A				
Contractual				**$ 567,399**
Consultant Costs				
Task 1 - Testing and Updating the SCV Water Groundwater Model (Consultant Labor Ho	$ 202.04	1397	Hours	$ 282,250
Task 1 - Testing and Updating the SCV Water Groundwater Model (Travel)	$ 3,360	1	LS	$ 3,360
Task 2 – Sensitivity Testing of Potential Alluvial Pumping Concepts (Consultant Labor Ho	$ 192.58	726	Hours	$ 139,810
Task 2 – Sensitivity Testing of Potential Alluvial Pumping Concepts (Supplies and Materi	$ 2,000	1	LS	$ 2,000
Task 2 – Sensitivity Testing of Potential Alluvial Pumping Concepts (Travel)	$ 1,770	1	LS	$ 1,770
Task 3 – Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without AR (Consultant Labor Hours)	$ 193.16	707	Hours	$ 136,564
Task 3 – Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without AR (Travel)	$ 1,645	1	LS	$ 1,645
Third-Party In-Kind Contributions				
N/A				
Other				**$ 1,000**
BOR Environmental Review	$ 10,000	1	LS	$ 1,000
TOTAL DIRECT COSTS				**$ 726,748**
Indirect Costs				
N/A				
TOTAL ESTIMATED PROJECT COSTS				**$ 726,748**

Budget Narrative

Salaries and Wages

The SCV Water personnel to work on this project are expected to be Senior Water Resources and Data Scientist, Principal Water Resource Planner, Management Analyst II, Administrative Technician, Assistant General Manager, and the Director of Water Resources. The hours within the project budget are estimated based on similar projects which SCV Water has pursued in the past and the hourly rates represent the hourly rate for each job classification.

Fringe Benefits

The SCV Water personnel to work on this project are expected to be Senior Water Resources and Data Scientist, Principal Water Resource Planner, Management Analyst II, Administrative Technician, Assistant General Manager, and the Director of Water Resources. The hours within the project budget are estimated based on similar projects which SCV Water has pursued in the past and the fringe benefit rates represent the Fiscal Year 2024 cost of fringe benefits borne by SCV Water for each job classification.

Travel
All consultant travel expenses are covered within their contract which is listed in the "Contractual" section below.

Equipment
Not applicable.

Materials and Supplies
All consultant material and supplies expenses are covered within their contract which is listed in the "Contractual" section below.

Contractual
SCV Water will award the project through a competitive bid process and will select the most qualified consultant following its procurement process meeting the federal and state regulations. The three tasks to be performed by the selected contractor include: Task 1: Testing and Updating the SCV Water Groundwater Model, Task 2: Sensitivity Testing of Potential Alluvial Pumping Concepts, and Task 3: Sensitivity Testing of Potential Alluvial/Saugus Pumping Concepts with and without Aquifer Response. The estimated hours and average hourly costs for each task are detailed in the Project Budget table above.

Third-Party In-Kind Contributions
Not applicable.

Environmental and Regulatory Compliance Costs
Not applicable.

Other Expenses
The only other cost is the $1,000 cost for Reclamation to perform its environmental review.

Indirect Costs
Not applicable.

Total Costs
The total Project cost is projected to be $726,748 as detailed in the Project budget table above.

SECTION 3: ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

- *Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

The Project will only collect data from existing wells and stream gages and update the existing GWFM and, therefore, the Project is not anticipated to produce any significant or permanent impact on dust, air quality, or the surrounding animal habitat.

- *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

The Project will only collect data from existing wells and stream gages and update the existing GWFM. Therefore, any Federally threatened species, endangered species, or designated critical habitat in the Project area will not be affected. For reference, below is a list of various species and their Federal and State listing status.

Table 5. Species and Listing Status

Species	Federal Status	State Status
UTS	Endangered	Endangered, Fully Protected
SAS	Threatened	
Arroyo Chub		Spp of Special Concern
Western Pond Turtle		Spp of Special Concern
LBV	Endangered	Endangered

- *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.*

There are no wetlands or other surface waters that will be affected by Project activities since this will only involve updating the GWFM with data currently being collected.

- *When was the water delivery system constructed?*

The completion of the Earl Schmidt Filtration plant in 1980 CLWA (Castaic Lake Water Agency- SCV Water's predecessor agency) began transmission of SWP Water to the retail

purveyors. SCV Water's water delivery system undergoes routine maintenance based on SCV Water's Capital Improvement Plan.

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

No, the Project will not include any modifications of or impacts to individual features of irrigation systems.

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

The Project will not result in any construction activities and will therefore not affect any buildings that are listed in the National Register of Historic Places.

- *Are there any known archeological sites in the proposed project area?*

No, there are no known archeological sites that will be impacted since this Project will not include any construction activities.

- *Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

No, the Project will not have a negative or adverse effect on low income or minority populations.

- *Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

According to the United States Environmental Protection Agency, California Tribal Lands and Reservations Map, there are no Tribal lands within or near the Project sites. Therefore, no access to Tribal lands will be negatively impacted by the Project.

- *Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

The Project will not involve any construction activities and therefore will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species.

SECTION 4: REQUIRED PERMITS OR APPROVALS

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

There are no permit requirements or other approvals needed for this Project.

SECTION 5: REQUIRED STATEMENTS

Overlap or Duplication of Effort Statement

There are no overlaps or duplicative efforts associated with the implementation of this Project, this funding application, and/or other SCV Water projects.

Conflict of Interest Disclosure Statement

No actual or potential conflicts of interest associated with the implementation of this Project have been identified prior to or during the time of submission of this application.

SECTION 6: LETTERS OF PROJECT SUPPORT

13 September 2023

Bureau of Reclamation
Water Resources and Planning Office
Attn: Ms. Avra Morgan
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225-0007

RE: Letter of Support for the Santa Clarita Valley Water Agency's Groundwater Model Refinement and Calibration Project for the Bureau of Reclamation Applied Science Grant

Dear Ms. Morgan,

The purpose of this letter is to express the Santa Clara River Conservancy's (SCRC) support for the Santa Clarita Valley Water Agency's (SCV Water) grant application for the Bureau of Reclamation's (USBR) FY2023 Applied Science Grant Program. SCV Water is submitting a grant application to fund a Groundwater Model Refinement and Calibration project to support the evaluation and development of new groundwater operating strategies that could improve the reliability of the aquifer system and the ecology in the Santa Clara River. This investment in science, resulting in an improved understanding of the Santa Clara River's water resources, is critical to managing these water resources.

The groundwater numerical model developed for the Groundwater Sustainability Plan (GSP) is the primary model used to better understand the adequacy of local groundwater supply and fundamentally address questions about surface water and groundwater resources. Investment in, and refinement of, this groundwater model will allow SCV Water to evaluate how new groundwater operating strategies can improve the reliability of the basin and ensure ample water supply during droughts and emergencies while protecting environmental flows in the Santa Clara River.

The severity of California's ongoing long-term drought, coupled with the high variability of State Water Project supplies and the projected long-term impacts of climate change underscores the need for continued improvement in management strategies of SCV Water's water supply portfolio. A major priority of SCV Water is to maintain a reliable and resilient water supply to address potential water shortages caused by evolving regulations and extreme weather cycles that are features of California's climate. SCRC's project work and the riparian habitats that we are restoring and on which we are focused for conservation, are impacted by current and future challenges related to climate change and urban development, and rely upon SCV Water to effectively manage its water supplies to support sustainability, longevity, and prosperity of the watershed.

Given these reasons, I support SCV Water's application for the FY 2023 Applied Science Grant Program and hope the application is favorably received and is selected to receive a grant.

Sincerely,

Shawn W. Kelly, Executive Director
Santa Clara River Conservncy

City of
SANTA CLARITA

23920 Valencia Boulevard • Santa Clarita, California 91355-2196
Phone: (661) 259-2489 • FAX: (661) 259-8125
www.santa-clarita.com

Jason Gibbs
Mayor

September 18, 2023

United States Bureau of Reclamation
Water Resources and Planning Office
P.O. Box 25007
Denver, CO 80225

To Whom It May Concern:

Subject: Support for the Santa Clarita Valley Water Agency's Groundwater Model Refinement and Calibration Project Grant Application

I am pleased to support the Santa Clarita Valley Water Agency's (SCVWA) grant application for the United States Bureau of Reclamation's (USBR) Fiscal Year 2023 Applied Science Grant Program. SCVWA is submitting the grant application to fund a Groundwater Model Refinement and Calibration project to support the evaluation and development of new groundwater operating strategies that could improve the reliability of the aquifer system and the ecology in the Santa Clara River.

The City of Santa Clarita relies on SCVWA to provide clean, safe, and reliable drinking water for over 228,000 residents. Investments in the Santa Clara River are critical, as the Santa Clara River system is one of the last remaining river systems in California relatively intact and recognized as exceptional in its value and quality.

The groundwater numerical model developed for the Groundwater Sustainability Plan (GSP) is the primary model used to better understand the adequacy of local groundwater supply and readily address questions about surface water and groundwater resources. Refinement of this groundwater model will allow SCVWA to evaluate how new groundwater operating strategies can improve the reliability of the basin and ensure ample water supply during droughts and emergencies while protecting environmental flows in the Santa Clara River.

The severity of California's recent drought, coupled with the high variability of State Water Project supplies, underscores the need for continued improvement in management strategies of SCVWA's water supply portfolio. A major priority of SCVWA is to maintain a reliable and resilient water supply to address potential

water shortages caused by evolving regulations and extreme weather cycles that are features of California's climate.

Thank you in advance for your consideration of this grant application. I respectfully urge your support of SCVWA's application for the Fiscal Year 2023 Applied Science Grant Program.

Sincerely,

Jason Gibbs
Mayor

JG:MH:sk
S/MS/Masis/Letters/SCVWA LoS

TreePeople Celebrating 50 Years of Growth est. 1973

September 15th, 2023

Bureau of Reclamation
Water Resources and Planning Office
Attn: Ms. Avra Morgan
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225-0007

RE: Letter of Support for the Santa Clarita Valley Water Agency's Groundwater Model Refinement and Calibration Project for the Bureau of Reclamation Applied Science Grant

Dear Ms. Morgan,

The purpose of this letter is to express TreePeople's support for the Santa Clarita Valley Water Agency's (SCV Water) grant application for the Bureau of Reclamation's (USBR) FY2023 Applied Science Grant Program. SCV Water is submitting the grant application to fund a Groundwater Model Refinement and Calibration project to support the evaluation and development of new groundwater operating strategies that could improve the reliability of the aquifer system and the ecology of the Santa Clara River.

The groundwater numerical model developed for the Groundwater Sustainability Plan (GSP) is the primary model used to understand the adequacy of local groundwater supply better and readily address questions about surface water and groundwater resources. Refinement of this groundwater model will allow SCV Water to evaluate how new groundwater operating strategies can improve the reliability of the basin and ensure ample water supply during droughts and emergencies while protecting environmental flows in the Santa Clara River.

The severity of California's recent drought, coupled with the high variability of the State Water Project supplies and the projected long-term impacts of climate change underscore the need for continued improvement in the management strategies of SCV Water's water supply portfolio. A major priority of SCV Water is to maintain a reliable and resilient water supply to address potential water shortages caused by evolving regulations and extreme weather cycles that are features of California's climate. TreePeople's work is impacted by the current and future challenges and relies upon SCV Water to effectively manage its water supplies to support the sustainability, longevity, and prosperity of our organization's work.

Given these reasons, TreePeople supports SCV Water's application for the FY 2023 Applied Science Grant Program and hopes the application is selected to receive a grant.

Sincerely,
Amanda Begley

Water Equity Associate Program Manager
Watershed Coordinator, Santa Clara River Watershed - Safe, Clean Water Program

treepeople.org 12601 Mulholland Drive, Los Angeles, CA 90210

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

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SANTA BARBARA • SANTA CRUZ

MARINE SCIENCE INSTITUTE
SANTA BARBARA, CALIFORNIA 93106-6150
PHONE: (805) 893-2911
FAX: (805) 893-8062

13 September 2023

Bureau of Reclamation, Water Resources and Planning Office
Attn: Ms. Avra Morgan
Mail Code: 86-63000, P.O. Box 25007
Denver, CO 80225-0007

RE: Letter of Support for the Santa Clarita Valley Water Agency's Groundwater Model Refinement and Calibration Project for the Bureau of Reclamation Applied Science Grant

Dear Ms. Morgan,

This letter is intended to express support from our research group at UC Santa Barbara for the Santa Clarita Valley Water Agency's (SCV Water) grant application for the Bureau of Reclamation's (USBR) FY2023 Applied Science Grant Program. SCV Water is submitting the grant application to fund a Groundwater Model Refinement and Calibration project to support the evaluation and development of new groundwater operating strategies that could improve the reliability of the aquifer system and the ecology in the Santa Clara River. Our research group in the UCSB Marine Science Institute is conducting research on the interactions between groundwater availability and ecological functions in the Santa Clara River, so we are particularly appreciative of the value of information derived from this Applied Science project.

The groundwater numerical model developed for the Groundwater Sustainability Plan (GSP) is key to better understanding of the adequacy of local groundwater supply for addressing questions about surface water and groundwater resources. Refinement of the model will allow SCV Water to evaluate how new groundwater operating strategies can improve reliability of the basin and ensure ample water supply during drought and emergencies while protecting environmental flows in the Santa Clara River.

The severity of California's recent drought coupled with the high variability of State Water Project supplies and the projected long-term impacts of climate change underscores the need for continued improvement in management strategies of SCV Water's water supply portfolio. A major priority of SCV Water is to maintain a reliable and resilient water supply to address potential water shortages caused by evolving regulations and extreme weather cycles that are features of California's climate. The UCSB Marine Science Institute is acutely aware of the current and future challenges facing the SCV Water responsibility to effectively manage its water supplies to support sustainability, longevity, and prosperity of our agency.

Given these reasons, I support SCV Water's application for the FY 2023 Applied Science Grant Program and hope the application is selected to receive a grant.

Sincerely,

Tom Dudley
Research Faculty, Marine Science Institute, UC Santa Barbara

SECTION 7: OFFICIAL RESOLUTION

RESOLUTION NO.

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SANTA CLARITA VALLEY WATER AGENCY AUTHORIZING AN APPLICATION FOR GRANT FUNDING UNDER THE BUREAU OF RECLAMATION'S FY2023 WATERSMART APPLIED SCIENCE GRANT PROGRAM FOR THE AGENCY'S GROUNDWATER MODEL REFINEMENT AND CALIBRATION PROJECT

WHEREAS, the Santa Clarita Valley Water Agency's (Agency) Resiliency Water Master Planning process focuses on optimizing the utilization of the local groundwater basin, as well as overall water supply reliability, by evaluating the water resources portfolio of the Agency and the ecological values of the Santa Clara River as interrelated systems; and

WHEREAS, the Agency is in the planning stages of assessments to enable more sophisticated analyses of the current groundwater operating plan in the context of the water supply needs in the Agency's service area and the stewardship objectives for the Santa Clarita River; and

WHEREAS, the Agency seeks to advance the Resiliency Water Master Plan by engaging in a Groundwater Model Refinement and Calibration Project (Project) by incorporating data that is being gathered through ongoing and future aquifer testing to provide more robust groundwater operations analyses and to examine alternative groundwater operating scenarios; and

WHEREAS, the United States Department of the Interior offers financial assistance in the form of grant funding through its Bureau of Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Applied Science Grant Program for this type of project. The WaterSMART Applied Science Grant program provides funding up to $400,000 per award, but not to exceed 50% of the total project cost; and

WHEREAS, the Agency desires to fund part of the cost of the Project with grant funding from the WaterSMART FY2023 Applied Science Grant program.

NOW, THEREFORE BE IT RESOLVED, the Board of Directors of the Santa Clarita Valley Water Agency hereby finds, determines, declares, and resolves as follows:

1. The Board hereby supports a grant application to the WaterSMART Applied Science Grant Program.

2. The Board hereby authorizes and directs the General Manager, or his or her designee, to complete, review, sign and submit, for and on behalf of the Agency, a grant application to the Bureau of Reclamation's WaterSMART Applied Science Grant Program for its Groundwater Model Refinement and Calibration Project.

3. The General Manager, or his or her designee, is authorized and designated to provide the assurances, certifications, and commitments required for the grant application, including executing a financial assistance or similar agreement with the Bureau of Reclamation within established deadlines and any

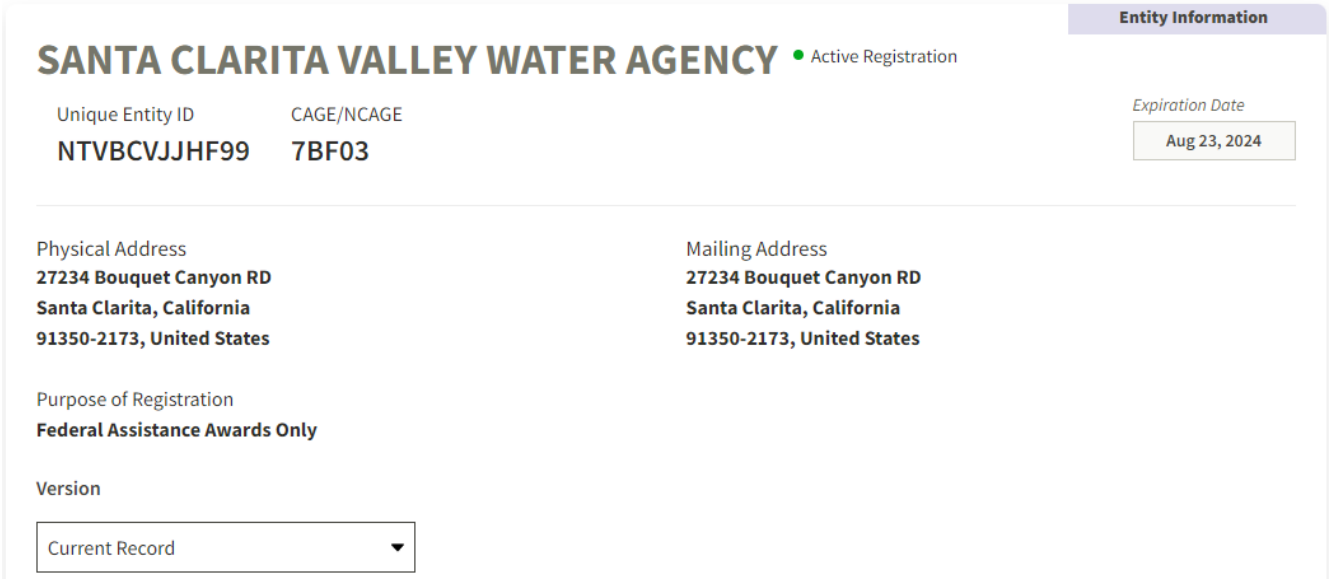
amendments or changes thereto.

4. The General Manager, or his or her designee, is authorized and designated to represent the Agency in carrying out the Agency's responsibilities under any future grant agreement, including certifying disbursement requests on behalf of the Agency and compliance with applicable state and federal laws.

5. If a grant award is made to the Agency by the Bureau of Reclamation, the Agency commits, pending compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) and Board approval of the Groundwater Model Refinement and Calibration Project, to providing a minimum of 100% in matching funds and up to the balance of funds needed to complete the Groundwater Model Refinement and Calibration Project.

6. This Resolution shall take effect immediately.

SECTION 8: PROOF OF SAM REGISTRATION



Entity Information

SANTA CLARITA VALLEY WATER AGENCY ● Active Registration

Unique Entity ID
NTVBCVJJHF99

CAGE/NCAGE
7BF03

Expiration Date
Aug 23, 2024

Physical Address
27234 Bouquet Canyon RD
Santa Clarita, California
91350-2173, United States

Mailing Address
27234 Bouquet Canyon RD
Santa Clarita, California
91350-2173, United States

Purpose of Registration
Federal Assistance Awards Only

Version

Current Record