

San Gorgonio Pass Water Agency

DATE: September 12, 2022

TO: Board of Directors

FROM: Lance Eckhart, General Manager

BY: Lance Eckhart, General Manager

SUBJECT: JOINT FUNDING AGREEMENT BETWEEN SAN GORGONIO PASS WATER AGENCY AND THE UNITED STATES GEOLOGICAL SURVEY FOR THE ANNUAL EXTENSION OF THE COOPERATIVE WATER RESOURCES PROGRAM

RECOMMENDATION

Staff recommends the Board approve the execution of a Joint Funding Agreement regarding the annual extension of the Cooperative Water Resources Program between the Agency and the United States Geological Survey (USGS) for the fiscal year 2022-2023 (FY 2022-23).

PREVIOUS CONSIDERATION

- Board of Directors: A cooperative agreement has been considered annually and approved by the Board since 1995.

BACKGROUND

A cooperative water resources program between the Agency and the USGS has been in place since 1995. The program has served, and continues to serve, as an integral part of the Agency's ability to understand and manage the basin(s). The extension of this program for FY 2022-23 will be crucial to the Agency's ongoing basin management efforts. Groundwater monitoring is fundamental to the management of the local adjudication and the region's two Groundwater Sustainability Plans.

The elements of this cooperative agreement consist of:

1. Groundwater-Level Monitoring
 - USGS staff will monitor water levels at selected wells to supplement regional monitoring efforts and maintain the regional water level monitoring program.
 - NOTE: The transducer network (continuous monitoring stations) will be reduced from 27 to 18 wells in order to control costs and deploy resources in data-gap areas.

2. Water-Quality Monitoring

- USGS staff will collect water quality samples at selected wells to supplement regional monitoring efforts and maintain the regional water-quality monitoring program.
 - NOTE: The frequency of sampling for select well sites has been decreased from every three years to every four years. A goal of Task 2 will be to begin to incorporate data-gap areas (e.g., Calimesa Basin) into the monitoring program and control the cost of additional sampling points by developing a more tailored and precise sampling schedule.

3. Project Website Updates

- Work will consist of developing interactive maps/tools that more easily deliver a material volume of groundwater model, geospatial and water level/water quality data to the public and stakeholders.

4. Calimesa Subarea Data Collection

- The Calimesa Subarea is data poor. The Agency, along with project partners, is planning a recharge facility in the Calimesa area. Work associated with this task will consist of a review of potential existing wells from various sources that may be incorporated into the local water level/water quality network. Incorporating existing monitoring points, if possible, is preferable to costly well drilling programs.

ANALYSIS

Below is a list of tasks and funds associated with this program for FY 2022-23.

<u>Task No.</u>	<u>Description of Work</u>			<u>Agency Funds</u>	<u>USGS Funds</u>	<u>Total Funds</u>
1	Water-Level Monitoring			60,601	14,049	74,650
2	Water-Quality Monitoring			73,179	9,579	82,758
3	Website Updates			2,394	599	2,993
4	Calimesa Collection	Subarea	Data	7,433	1,756	9,189
<i>Total:</i>				143,607	\$25,983	\$169,590

The USGS has procured Cooperative Matching Funds (CMF) of \$25,983 to augment the total cost of this year's program. This is a slight decrease in USGS matching funds over last year and a slight increase ~\$12,000 increase in the Agency portion compared to the previous year. It should be noted that Tasks 3 and 4 are new scope items compared to last year.

A letter specifying work and expected matching funds from the USGS is attached (Attachment 1). Signing this letter will commit parties to specified work associated with Tasks 1 through 4. Following the signing of the attached letter, matching funds will be secured, and the USGS will prepare a Joint Funding Agreement.

FISCAL IMPACT

The fiscal impact for the Agency would be \$143,607, with \$25,983 being matched by the USGS for a total of \$169,590 for FY 2022-23.

The Agency has budgeted \$150,000 in the FY 2022-23 General Fund Budget for USGS services.

ACTION

Enter into the USGS Joint Funding Agreement with the USGS for FY 2022-23.

ATTACHMENT

1. August 31, 2022, USGS Letter to enter a Joint Funding Agreement and Agreement Materials



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
California Water Science Center
6000 J Street, Placer Hall
California State University
Sacramento, California 95819-6129
Phone: (916) 278-3000 Fax: (916) 278-3070
<https://www.usgs.gov/centers/ca-water/>

August 31, 2022

Lance Eckhart, PG, CHG
General Manager/Chief Hydrogeologist
San Geronio Pass Water Agency
1210 Beaumont Ave.
Beaumont CA 92223

Dear Mr. Eckhart:

This letter confirms discussions between our respective staffs concerning the cooperative program between the San Geronio Pass Water Agency (SGPWA) and the U.S. Geological Survey (USGS) during the period October 31, 2022, to November 30, 2023.

The work proposed under the enclosed Joint Funding Agreement (JFA) is a continuation of the cooperative basin-wide monitoring network and to characterize a planned artificial-recharge site in the Calimesa subarea for conjunctive use in the San Geronio Pass area. The program consists of four main tasks: Task 1, basin-wide water-level monitoring; Task 2, basin-wide water-quality monitoring; Task 3, website updates; Task 4, collect information and water-level data from existing wells in the Calimesa subarea. A description of progress on these tasks is included as an attachment to this letter.

The total cost of the proposed cooperative water-resources program is \$169,590 (table 1). Of this total, the SGPWA will contribute \$143,607 and, subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$25,983. The proposed period for this program is October 31, 2022, to November 30, 2023.

Table 1. FFY23 Budget

Program element		USGS	SGPWA	Total
Task 1	Water-Level Monitoring	\$14,049	\$60,601	\$74,650
Task 2	Water-Quality Monitoring	\$9,579	\$73,179	\$82,758
Task 3	Website Updates	\$599	\$2,394	\$2,993
Task 4	Calimesa subarea data collection	\$1,756	\$7,433	\$9,189
Total		\$25,983	\$143,607	\$169,590

Enclosed is a digital version of Joint Funding Agreement (JFA) 23ZGJFA21000067 for your approval. If you are in agreement with the proposed program, please return a fully executed JFA to our office via email address iarios@usgs.gov. Work performed with funds from this agreement will be conducted on a fixed-price basis.

If you have any questions concerning the program described above, please contact Adam R. Kjos at (619) 225-6145 or Christina Stamos at (619) 225-6141 in our San Diego Office. If you have any administrative questions, please contact Irene Rios at (619) 225-6156.

Sincerely,

Mark Dickman
Acting Director, USGS California Water Science Center

Enclosures:

Cc Adam R. Kjos, USGS CAWSC
Christina Stamos, USGS CAWSC

**U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations**

**Customer #: 6000000967
Agreement #: 23ZGJFA21000067
Project #: ZG00AOY
TIN #:**

Fixed Cost Agreement YES[X] NO[]

THIS AGREEMENT is entered into as of the October 31, 2022, by the U.S. GEOLOGICAL SURVEY, California Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the San Geronio Pass Water Agency party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation Water Resource Investigations (per attachment), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) \$25,983 by the party of the first part during the period October 31, 2022 to November 30, 2023
- (b) \$143,607 by the party of the second part during the period October 31, 2022 to November 30, 2023
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of:

Description of the USGS regional/national program:
- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www.usgs.gov/about/organization/science-support/science-quality-and-integrity/fundamental-science-practices>).

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR

Customer #: 6000000967
Agreement #: 23ZGJFA21000067
Project #: ZG00AOY
TIN #:

Water Resource Investigations

9. Billing for this agreement will be rendered quarterly. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name: Adam Kjos, Hydrologist
Address: 4165 Spruance Rd., Ste 200
San Diego, CA 92101
Telephone: 619-225-6145
Fax:
Email: adamkjos@usgs.gov

Customer Technical Point of Contact

Name: Lance Eckhart, General Manager
Address: 1210 Beaumont Ave
Beaumont, CA 92223
Telephone: 951-845-2577
Fax:
Email: leckhart@sgpwa.com

USGS Billing Point of Contact

Name: Irene Rios, Budget Analyst
Address: 4165 Spruance Rd., Ste 200
San Diego, CA 92101
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Email: iarios@usgs.gov

Customer Billing Point of Contact

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Email: lechart@sgpwa.com

U.S. Geological Survey
United States
Department of Interior

San Geronio Pass Water Agency

Signature

By _____ Date: 08/30/2022
Name: Mark Dickman
Title: Acting Director, USGS California Water Science
Center

Signatures

By _____ Date: _____
Name: Mr. Lance Eckhart
Title: General Manager, San Geronio Pass WA

By _____ Date: _____
Name:
Title:

By _____ Date: _____
Name:
Title:

San Gorgonio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

Task 1 – Groundwater-Level Monitoring

Progress

A basin-wide groundwater-level monitoring (GW) network was established in the San Gorgonio Pass area in Federal Fiscal Year 1997 (FFY97) to evaluate existing hydrologic conditions and to monitor the effects of pumping and artificial recharge on the groundwater system. A key component of the network is collecting data from the multiple-well monitoring sites, which provide information on water-level changes and potential vertical gradients within aquifers. During FFY22, continuous (hourly) water-level data were collected, analyzed, reviewed, and approved at 27 wells; this includes quarterly discrete water-level measurements at 28 wells. Additionally, semi-annual discrete water-level measurements were taken at all accessible wells (up to 84) in the spring and fall in the water-level network (table 2).

Plans

In FFY23, the U.S. Geological Survey (USGS) personnel will take measurements at 28 wells quarterly (table 2 and figure 1). The transducer network will be reduced from 27 wells to 18 wells. Data from sites with transducers were evaluated to determine the feasibility and value of the continuous data. It was determined that the hydrologic conditions at some sites with transducers are adequately monitored by the quarterly discrete water-level measurements, resulting in the reduction from 6 transducer sites in FFY22 to 9 transducer sites in FFY23. Transducers in 9 wells at Sites 3, 8, and 10 will be discontinued from continuous (hourly) monitoring and the transducers will be removed during the FFY23 first-quarter visit.

USGS personnel will also be accompanying San Gorgonio Pass Water Agency (SGPWA) personnel semi-annually in the spring and fall and will attempt to measure discrete water-levels at 84 wells (table 2 and figure 1). Data collected as part of the water-level network are available through the USGS National Water Information System (NWIS) online database. Links to these wells are provided in table 2.

An additional sub-task associated with the groundwater-level monitoring this FFY is the added requirement of setting secondary reference marks and leveling them in at continuous monitoring sites. The discontinuation of continuous water-level data collection at 9 wells (3 sites); allowed for the addition of Task 4 (Calimesa subarea data collection). The addition of secondary reference marks is unique to this FFY and re-leveling of these secondary marks is currently required every 5 years. Further review of hydrographic records with respect to continuous data and static water-level measurements of continuous groundwater-level monitoring sites will be completed and the continued need for data collection and analysis for subsequent program years will be evaluated; current evaluations are noted in table 2.

San Gorgonio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

Total cost for the above work is \$74,650. Of this total, SGPWA will contribute \$60,601 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$14,049, as reflected in the summary funding table 1.

Task 1, FFY 2023 cost for water-level monitoring \$ 74,650

Task 2 – Water-Quality Monitoring

Progress

In FFY21, it was decided to restructure the water-quality (QW) network to minimize the annual increase in network costs, resulting from the addition of 11 newly constructed wells at Sites 11, 12, and 13 (fig. 2). The sample interval of each well in the water-quality network was increased to every four years instead of three. This ensures that each site will be sampled on a regular basis and help maintain reasonable costs compared to previous years. The water-quality network currently has a total of 49 wells.

In FFY22, the USGS sampled 12 of the planned 13 wells. Water samples were collected and analyzed for major ions, nutrients, selected trace elements, and stable isotopes of oxygen and hydrogen. Samples collected from selected wells also were analyzed for chromium-3 and chromium-6 redox species, based on the concentration of dissolved chromium from the previous years' sampling results. Complete results for all samples collected as part of the water-quality monitoring network are available through the USGS NWIS online database. NWIS links to individual wells are provided in table 3.

Plans

The current water-quality monitoring network includes 49 wells (table 3 and fig. 2). During FFY23, the USGS plans to sample 13 network wells including quality assurance samples (replicates and blank samples). This includes production well 3S/2E-09E1S, which was not in operation and was unavailable to be sampled during FFY22. The samples collected will be analyzed for major ions, nutrients, selected trace elements, stable isotopes of oxygen and hydrogen, and chromium speciation. In the Calimesa subarea, stable isotope samples will be collected and basic field parameters (pH, specific conductance, water temperature) will be recorded at up to 8 wells. This will likely include production wells of the South Mesa Water Company, which are down gradient of the proposed recharge facility of SGPWA. All data collected will be entered into the USGS NWIS database with appropriate quality control measures and will be available through the USGS NWIS online database. In addition, an initial assessment is planned in FFY23 to canvas and sample existing wells in the southern Calimesa subarea (see Task 4), sampling costs are included in this task.

San Gorgonio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

Total cost for Task 2 is \$82,758. Of this total, SGPWA will contribute \$73,179 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$9,579, as reflected in the summary funding table 1.

Task 2, FFY 2023 cost for water-quality monitoring \$ 82,758

Task 3 –Project Website Updates

Progress

Currently a descriptive USGS project website is publicly available for this study at:

<https://www.usgs.gov/centers/california-water-science-center/science/san-gorgonio-pass-artificial-recharge-investigation>

In FFY21, a large amount for geospatial data were compiled with appropriate references directly related to the study area. This data is best served through a web interface and otherwise would require specialized software to access.

Plans

The FFY23, website updates include the addition of interactive maps with NWIS online database links to currently available data for sites in the study area, general updates to reflect current work, and the integration of currently compiled geospatial data.

Total cost for Task 3 is \$2,993. Of this total, SGPWA will contribute \$2,394 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$599, as reflected in the summary funding table 1.

Task 3, FFY 2023 cost for project website updates \$2,993

Task 4 – Calimesa Subarea Data Collection

Progress

SGPWA's recent acquisition of property and the planned development of a recharge facility in the southern Calimesa subarea (fig. 1) requires expansion of the basin-wide monitoring network. Current water-quality and water-level information in this area are lacking. To establish a baseline of groundwater conditions prior to managed-aquifer recharge and to better identify potential future changes in this area, additional monitoring sites are needed.

San Gorgonio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

Plans

The current water-level and water-quality network does not encapsulate conditions in the southern Calimesa subarea. In FFY23, a preliminary field survey of potential water-level monitoring and water-quality sites in this area will be conducted. Potential sites will be canvassed, available site information will be gathered and entered in USGS databases. All data collected will be provided to the SGPWA. Specifically, canvassing of the South Mesa Water Company production wells down-gradient of the proposed recharge facility will be canvassed and sampled for stable isotopes of oxygen and hydrogen (sampling costs are included in Task 2). Additionally, a search and review for potential wells (domestic, irrigation, municipal supply, monitoring) will be conducted using publicly available well-record databases for future expansion of the network. Following this task, a list of 8-10 wells will be selected for adding to the network; all other sites will be saved for future potential sampling and/or water-level monitoring.

Total cost for Task 4 is \$9,189. Of this total, SGPWA will contribute \$7,433 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$1,756, as reflected in the summary funding table 1.

Task 4, FFY 2023 cost for Calimesa subarea investigation	\$ 9,189
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<i>Total FFY 2023 costs for task 1-4</i>	<i>\$ 169,590</i>
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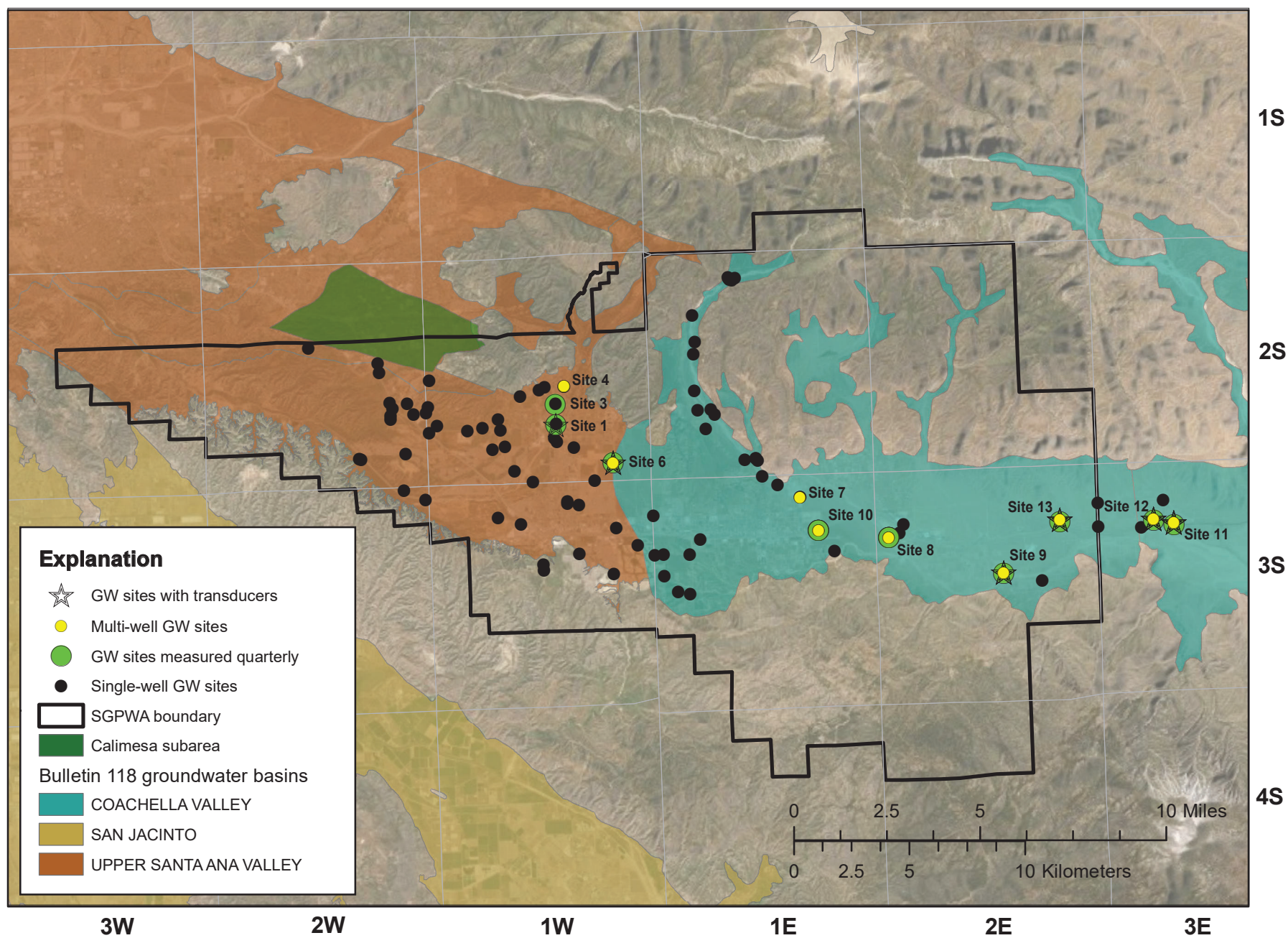


Figure 1. Proposed sites for the FFY23 water-level monitoring network.

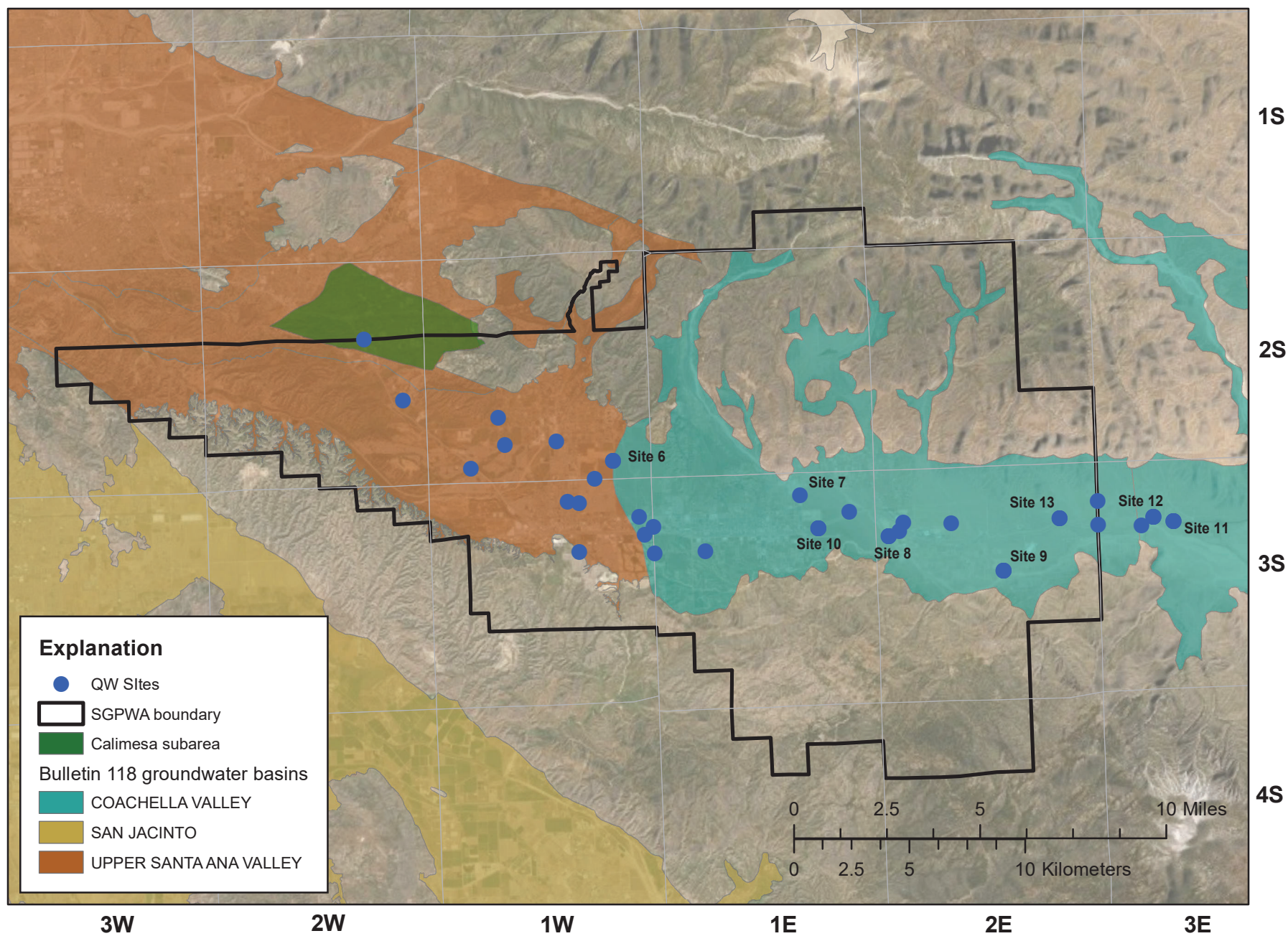


Figure 2. Map showing the water-quality network. Established proposed sites for FFY23 are listed in table 3. Additional sites in the Calimesa subarea will be determined this FFY.

Table 2. Water-level network.

State well number	USGS site number	Site name	Measurement schedule	Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
2S/1E--04L1	340126116532501		Semi-annual	34.0240028	-116.8901306	http://waterdata.usgs.gov/nwis/inventory/?site_no=340126116532501
2S/1E--04L2	340124116531901		Semi-annual	34.0231917	-116.8884972	http://waterdata.usgs.gov/nwis/inventory/?site_no=340124116531901
2S/1E--04L3	340126116531301		Semi-annual	34.0237750	-116.8869306	http://waterdata.usgs.gov/nwis/inventory/?site_no=340126116531301
2S/1E-04N1	340124116532301		Semi-annual	34.0234722	-116.8897500	http://waterdata.usgs.gov/nwis/inventory/?site_no=340124116532301
2S/1E-04P3	340123116532201		Semi-annual	34.0232778	-116.8894722	http://waterdata.usgs.gov/nwis/inventory/?site_no=340123116532201
2S/1E-08M1	340035116542701		Semi-annual	34.0099167	-116.9076111	http://waterdata.usgs.gov/nwis/inventory/?site_no=340035116542701
2S/1E-17F2	335928116542001		Semi-annual	33.9996250	-116.9067000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335928116542001
2S/1E-17M1	335942116542701		Semi-annual	33.9951111	-116.9076750	http://waterdata.usgs.gov/nwis/inventory/?site_no=335942116542701
2S/1E-20P1	335851116542701		Semi-annual	33.9808333	-116.9077500	http://waterdata.usgs.gov/nwis/inventory/?site_no=335851116542701
2S/1E-29B1	335845116535801		Semi-annual	33.9733056	-116.9002806	http://waterdata.usgs.gov/nwis/inventory/?site_no=335845116535801
2S/1E-29G1	335823116542301		Semi-annual	33.9731944	-116.9063889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335823116542301
2S/1E-29H1	335817116535401		Semi-annual	33.9712750	-116.8984556	http://waterdata.usgs.gov/nwis/inventory/?site_no=335817116535401
2S/1E-29K2	335757116541001		Semi-annual	33.9658333	-116.9027778	http://waterdata.usgs.gov/nwis/inventory/?site_no=335757116541001
2S/1E-33J1	335707116524101		Semi-annual	33.9539667	-116.8797528	http://waterdata.usgs.gov/nwis/inventory/?site_no=335707116524101
2S/1E-33J2	335715116524701		Semi-annual	33.9539667	-116.8797528	http://waterdata.usgs.gov/nwis/inventory/?site_no=335715116524701
2S/1E-33J4	335712116524501		Semi-annual	33.9532056	-116.8789861	http://waterdata.usgs.gov/nwis/inventory/?site_no=335712116524501
2S/1E-33K1	335712116530501		Semi-annual	33.9535278	-116.8849444	http://waterdata.usgs.gov/nwis/inventory/?site_no=335712116530501
2S/1W-19D1	335916117015601		Semi-annual	33.9878333	-117.0324722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335916117015601
2S/1W-19N1	335840117015801		Semi-annual	33.9777722	-117.0336194	http://waterdata.usgs.gov/nwis/inventory/?site_no=335840117015801
2S/1W-21L4	335849116592101		Semi-annual	33.9807500	-116.9899056	http://waterdata.usgs.gov/nwis/inventory/?site_no=335849116592101
2S/1W-22-1	335902116583701		Semi-annual	33.9840306	-116.9781583	http://waterdata.usgs.gov/nwis/inventory/?site_no=335902116583701
2S/1W-22G3	335902116580901	Site 4	Semi-annual	33.9841333	-116.9692222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335902116580901
2S/1W-22G4	335903116580902	Site 4	Semi-annual	33.9841333	-116.9692222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335903116580902
2S/1W-22M1	335859116584901		Semi-annual	33.9831234	-116.9807959	http://waterdata.usgs.gov/nwis/inventory/?site_no=335859116584901
2S/1W-22P6	335838116582504	Site 3	Quarterly ¹	33.9771306	-116.9734972	http://waterdata.usgs.gov/nwis/inventory/?site_no=335838116582504
2S/1W-27L1	335807116582201	Site 1	Quarterly ²	33.9685417	-116.9735583	http://waterdata.usgs.gov/nwis/inventory/?site_no=335807116582201
2S/1W-27P2	335746116582301		Semi-annual	33.9628330	-116.9731940	http://waterdata.usgs.gov/nwis/inventory/?site_no=335746116582301
2S/1W-27P3	335750116582701		Semi-annual	33.9640280	-116.9743890	http://waterdata.usgs.gov/nwis/inventory/?site_no=335750116582701
2S/1W-29G5	335808117002601		Semi-annual	33.9689044	-117.0080833	http://waterdata.usgs.gov/nwis/inventory/?site_no=335808117002601
2S/1W-29H1	335820116595901		Semi-annual	33.9721917	-117.0005611	http://waterdata.usgs.gov/nwis/inventory/?site_no=335820116595901
2S/1W-29J2	335804116595801		Semi-annual	33.9678889	-116.9996389	http://waterdata.usgs.gov/nwis/inventory/?site_no=335804116595801
2S/1W-29M2	335807117005601		Semi-annual	33.9680712	-117.0153058	http://waterdata.usgs.gov/nwis/inventory/?site_no=335807117005601
2S/1W-30E3	335813117014301		Semi-annual	33.9702139	-117.0294611	http://waterdata.usgs.gov/nwis/inventory/?site_no=335813117014301
2S/1W-30M2	335803117015901		Semi-annual	33.9677500	-117.0332500	http://waterdata.usgs.gov/nwis/inventory/?site_no=335803117015901

State well number	USGS site number	Site name	Measurement schedule	Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
2S/1W-32B3	335737117001301		Semi-annual	33.9605000	-117.0036667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335737117001301
2S/1W-33D1	335741116595201		Semi-annual	33.9613889	-116.9977778	http://waterdata.usgs.gov/nwis/inventory/?site_no=335741116595201
2S/1W-33L1	335707116593401		Semi-annual	33.9519603	-116.9936379	http://waterdata.usgs.gov/nwis/inventory/?site_no=335707116593401
2S/1W-33R2	335651116590601		Semi-annual	33.9476139	-116.9850528	http://waterdata.usgs.gov/nwis/inventory/?site_no=335651116590601
2S/1W-34A2	335740116575001		Semi-annual	33.9603361	-116.9652472	http://waterdata.usgs.gov/nwis/inventory/?site_no=335740116575001
2S/1W-35J1	335714116565001	Site 6	Quarterly ²	33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565001
2S/1W-35J2	335714116565002	Site 6	Quarterly ²	33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565002
2S/1W-35J3	335714116565003	Site 6	Quarterly ²	33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565003
2S/1W-35J4	335714116565004	Site 6	Quarterly	33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565004
2S/1W-35P1	335650116572101		Semi-annual	33.9473611	-116.9559722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335650116572101
2S/2W-14J2	335943117032001		Semi-annual	33.9952667	-117.0563778	http://waterdata.usgs.gov/nwis/inventory/?site_no=335943117032001
2S/2W-14R1	335930117032101		Semi-annual	33.9915222	-117.0558556	http://waterdata.usgs.gov/nwis/inventory/?site_no=335930117032101
2S/2W-16A1	340006117051801		Semi-annual	34.0017833	-117.0890306	http://waterdata.usgs.gov/nwis/inventory/?site_no=340006117051801
2S/2W-24K2	335846117023201		Semi-annual	33.9793361	-117.0430972	http://waterdata.usgs.gov/nwis/inventory/?site_no=335846117023201
2S/2W-24M2	335847117030201		Semi-annual	33.9799194	-117.0514083	http://waterdata.usgs.gov/nwis/inventory/?site_no=335847117030201
2S/2W-24N2	335840117025701		Semi-annual	33.9776611	-117.0501250	http://waterdata.usgs.gov/nwis/inventory/?site_no=335840117025701
2S/2W-25B1	335830117022201		Semi-annual	33.9751583	-117.0404222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335830117022201
2S/2W-25B5	335831117020401		Semi-annual	33.9753611	-117.0345000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335831117020401
2S/2W-25D1	335829117030101		Semi-annual	33.9748333	-117.0511083	http://waterdata.usgs.gov/nwis/inventory/?site_no=335829117030101
2S/2W-25D2	335824117030101		Semi-annual	33.9733583	-117.0512250	http://waterdata.usgs.gov/nwis/inventory/?site_no=335824117030101
2S/2W-35D5	335731117035601		Semi-annual	33.9586271	-117.0664195	http://waterdata.usgs.gov/nwis/inventory/?site_no=335731117035601
2S/2W-35D6	335729117035401		Semi-annual	33.9581750	-117.0657639	http://waterdata.usgs.gov/nwis/inventory/?site_no=335729117035401
2S/2W-36C1	335735117023401		Semi-annual	33.9598214	-117.0446962	http://waterdata.usgs.gov/nwis/inventory/?site_no=335735117023401
3S/1E-03C2	335636116520901		Semi-annual	33.9433694	-116.8699750	http://waterdata.usgs.gov/nwis/inventory/?site_no=335636116520901
3S/1E-03J1	335618116513401	Site 7	Semi-annual	33.9383333	-116.8594722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335618116513401
3S/1E-03J2	335618116513402	Site 7	Semi-annual	33.9383333	-116.8594722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335618116513402
3S/1E-04A1	335649116523401		Semi-annual	33.9469472	-116.8769917	http://waterdata.usgs.gov/nwis/inventory/?site_no=335649116523401
3S/1E-06N1	335558116554001		Semi-annual	33.9330306	-116.9288139	http://waterdata.usgs.gov/nwis/inventory/?site_no=335558116554001
3S/1E-08M1	335523116542301		Semi-annual	33.9230917	-116.9071472	http://waterdata.usgs.gov/nwis/inventory/?site_no=335523116542301
3S/1E-11F1	335531116510401	Site10	Quarterly ³	33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510401
3S/1E-11F2	335531116510402	Site10	Quarterly ³	33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510402
3S/1E-11F3	335531116510403	Site10	Quarterly ³	33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510403
3S/1E-11F4	335531116510404	Site10	Quarterly ³	33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510404
3S/1E-14A1	335502116503601		Semi-annual	33.9172380	-116.8441867	http://waterdata.usgs.gov/nwis/inventory/?site_no=335502116503601

State well number	USGS site number	Site name	Measurement schedule	Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
3S/1E-18A1	335504116544201		Semi-annual	33.9176306	-116.9124500	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116544201
3S/1E-18C1	335504116552601		Semi-annual	33.9177083	-116.9247944	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116552601
3S/1E-18D1	335504116554101		Semi-annual	33.9176889	-116.9289250	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116554101
3S/1E-18L1	335434116552601		Semi-annual	33.9095528	-116.9246167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335434116552601
3S/1E-19A1	335408116544601		Semi-annual	33.9023611	-116.9127778	http://waterdata.usgs.gov/nwis/inventory/?site_no=335408116544601
3S/1E-19B1	335412116550401		Semi-annual	33.9033639	-116.9182500	http://waterdata.usgs.gov/nwis/inventory/?site_no=335412116550401
3S/1W-02M1	335616116574901		Semi-annual	33.9380000	-116.9637222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335616116574901
3S/1W-03K1	335623116581701		Semi-annual	33.9397333	-116.9690917	http://waterdata.usgs.gov/nwis/inventory/?site_no=335623116581701
3S/1W-03K2	335621116581701		Semi-annual	33.9386806	-116.9690972	http://waterdata.usgs.gov/nwis/inventory/?site_no=335621116581701
3S/1W-05R3	335603117000401		Semi-annual	33.9341829	-117.0019714	http://waterdata.usgs.gov/nwis/inventory/?site_no=335603117000401
3S/1W-09C4	335552116592801		Semi-annual	33.9311667	-116.9913056	http://waterdata.usgs.gov/nwis/inventory/?site_no=335552116592801
3S/1W-10R3	335509116575101		Semi-annual	33.9192167	-116.9641806	http://waterdata.usgs.gov/nwis/inventory/?site_no=335509116575101
3S/1W-12E1	335543116564801		Semi-annual	33.9286111	-116.9466667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335543116564801
3S/1W-12L1	335519116561701		Semi-annual	33.9218944	-116.9367528	http://waterdata.usgs.gov/nwis/inventory/?site_no=335519116561701
3S/1W-14J2	335440116565101		Semi-annual	33.9111276	-116.9483578	http://waterdata.usgs.gov/nwis/inventory/?site_no=335440116565101
3S/1W-15D5	335456116585001		Semi-annual	33.9155721	-116.9814147	http://waterdata.usgs.gov/nwis/inventory/?site_no=335456116585001
3S/1W-15E1	335447116585201		Semi-annual	33.9131444	-116.9812250	http://waterdata.usgs.gov/nwis/inventory/?site_no=335447116585201
3S/2E-07G2	335535116483801		Semi-annual	33.9264042	-116.8114075	http://waterdata.usgs.gov/nwis/inventory/?site_no=335535116483801
3S/2E-07K1	335523116484601		Semi-annual	33.9231111	-116.8135000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335523116484601
3S/2E-07P1	335513116490601	Site 8	Quarterly ³	33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490601
3S/2E-07P2	335513116490602	Site 8	Quarterly ³	33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490602
3S/2E-07P3	335513116490603	Site 8	Quarterly ³	33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490603
3S/2E-07P4	335513116490604	Site 8	Quarterly ³	33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490604
3S/2E-15P1	335423116455301	Site 9	Quarterly ²	33.9064167	-116.7648889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455301
3S/2E-15P2	335423116455302	Site 9	Quarterly ²	33.9064167	-116.7648889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455302
3S/2E-15P3	335423116455303	Site 9	Quarterly ²	33.9064167	-116.7648889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455303
3S/2E-23C1	335411116444601		Semi-annual	33.9030712	-116.7469608	http://waterdata.usgs.gov/nwis/inventory/?site_no=335411116444601
3S/2W-01C1	335645117024201		Semi-annual	33.9456333	-117.0459722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335645117024201
3S/2W-01H1	335631117020601		Semi-annual	33.9419583	-117.0359472	http://waterdata.usgs.gov/nwis/inventory/?site_no=335631117020601
3S/3E-07D1	335556116431001		Semi-annual	33.9322222	-116.7194444	http://waterdata.usgs.gov/nwis/inventory/?site_no=335556116431001
3S/3E-07M1	335522116430701		Semi-annual	33.9230705	-116.7197378	http://waterdata.usgs.gov/nwis/inventory/?site_no=335522116430701
3S/3E-08A1	335557116411901		Semi-annual	33.9324444	-116.6887222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335557116411901
3S/3E-08M1	335522116415201		Semi-annual	33.9222222	-116.6993889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335522116415201
3S/3E-09M1	335525116410201	Site 11	Quarterly ²	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410201

State well number	USGS site number	Site name	Measurement schedule	Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
3S/3E-09M2	335525116410202	Site 11	Quarterly ²	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410202
3S/3E-09M3	335525116410203	Site 11	Quarterly ²	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410203
3S/3E-09M4	335525116410204	Site 11	Quarterly ²	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410204
3S/3E-08L1	335530116413701	Site 12	Quarterly ⁴	33.9252222	-116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413701
3S/3E-08L2	335530116413702	Site 12	Quarterly ⁴	33.9252222	-116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413702
3S/3E-08L3	335530116413703	Site 12	Quarterly ⁴	33.9252222	-116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413703
3S/3E-08L4	335530116413704	Site 12	Quarterly ⁴	33.9252222	-116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413704
3S/2E-11H1	335534116441501	Site 13	Quarterly ⁴	33.9261667	-116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441501
3S/2E-11H2	335534116441502	Site 13	Quarterly ⁴	33.9261667	-116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441502
3S/2E-11H3	335534116441503	Site 13	Quarterly ⁴	33.9261667	-116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441503

¹Discontinue transducer measurements. Well in perched zone and site is no longer used for recharge. Dry since 2016.

²Equipped with pressure transducers (60-minute intervals).

³Transducer will be removed in FFY23; discrete data represent hydrologic trend and min/max/ Switch to quarterly discrete measurements.

⁴Newer Site. Discrete data currently represent hydrologic trend; potential candidate to remove transducers in FFY24.

Table 3. Water-quality network.

State Well number	USGS site number	Well Type	Site name	Sampling year					Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
				2019	2020	2021	2022	2023			
2S/1W-32M1S	335709117004701	Production well				X			33.9526139	-117.0140528	http://waterdata.usgs.gov/nwis/inventory/?site_no=335709117004701
2S/1W-35J1S	335714116565001	SGPWA monitoring well	Site 6				X		33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565001
2S/1W-35J2S	335714116565002	SGPWA monitoring well	Site 6				X		33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565002
2S/1W-35J3S	335714116565003	SGPWA monitoring well	Site 6				X		33.9540139	-116.9472111	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565003
2S/2W-14C1S	340014117034301	Production well				X			34.0038972	-117.0627167	http://waterdata.usgs.gov/nwis/inventory/?site_no=340014117034301
2S/2W-24L1S	335848117024301	Production well					X		33.9799417	-117.0451889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335848117024301
3S/1E-07E2S	335540116553901	Production well			X				33.9278361	-116.9289833	http://waterdata.usgs.gov/nwis/inventory/?site_no=335540116553901
3S/1E-12D1S	335552116500901	Production well				X			33.9311264	-116.8366863	http://waterdata.usgs.gov/nwis/inventory/?site_no=335552116500901
3S/1E-17C1S	335504116541501	Production well			X				33.9177528	-116.9050389	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116541501
3S/1E-18D1S	335504116554101	Production well					X		33.9176889	-116.9289250	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116554101
3S/1W-03K2S	335621116581701	Production well				X			33.9386810	-116.9690970	http://waterdata.usgs.gov/nwis/inventory/?site_no=335621116581701
3S/1W-10R4S	335509116575201	Production well				X			33.9192167	-116.9641806	http://waterdata.usgs.gov/nwis/inventory/?site_no=335509116575201
3S/1W-12B2S	335556116560701	Production well			X				33.9321750	-116.9356194	http://waterdata.usgs.gov/nwis/inventory/?site_no=335556116560701
3S/1W-12K1S	335530116555901	Production well				X			33.9250028	-116.9332583	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116555901
3S/1E-11F1S	335531116510401	SGPWA monitoring well	Site 10				X		33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510401
3S/1E-11F2S	335531116510402	SGPWA monitoring well	Site 10				X		33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510402
3S/1E-11F3S	335531116510403	SGPWA monitoring well	Site 10				X		33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510403
3S/1E-11F4S	335531116510404	SGPWA monitoring well	Site 10				X		33.9252970	-116.8513470	http://waterdata.usgs.gov/nwis/inventory/?site_no=335531116510404
3S/2E-07G2S	335535116483801	Production well			X				33.9264042	-116.8114075	http://waterdata.usgs.gov/nwis/inventory/?site_no=335535116483801
3S/2E-07K1S	335523116484601	Production well			X				33.9231111	-116.8135000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335523116484601
3S/2E-09E1S	335532116471701	Production well			X		X ¹	X	33.9256944	-116.7887500	http://waterdata.usgs.gov/nwis/inventory/?site_no=335532116471701
3S/3E-07D1S	335556116431001	Production well				X			33.9322222	-116.7194444	http://waterdata.usgs.gov/nwis/inventory/?site_no=335556116431001
3S/3E-07M1S	335522116430701	Production well					X		33.9230705	-116.7197378	http://waterdata.usgs.gov/nwis/inventory/?site_no=335522116430701
3S/3E-08M1S	335522116415201	Production well			X				33.9222222	-116.6993889	http://waterdata.usgs.gov/nwis/inventory/?site_no=335522116415201
2S/1W-27P1S	335743116582401	Production well			X				33.9621250	-116.9734444	http://waterdata.usgs.gov/nwis/inventory/?site_no=335743116582401
2S/1W-33D2S	335741116595201	Production well					X		33.9613889	-116.9977778	http://waterdata.usgs.gov/nwis/inventory/?site_no=335741116595201
3S/1E-03J1S	335618116513401	SGPWA monitoring well		X				X	33.9383333	-116.8594722	http://waterdata.usgs.gov/nwis/inventory/?site_no=335618116513401
2S/1W-29H1S	335820116595901	Production well				X			33.9721920	-117.0005610	http://waterdata.usgs.gov/nwis/inventory/?site_no=335820116595901
2S/1W-35P1S	335650116572101	Production well					X		33.9473300	-116.9560280	http://waterdata.usgs.gov/nwis/inventory/?site_no=335650116572101
3S/1W-02M1S	335616116574901	Production well			X				33.9379440	-116.9636670	http://waterdata.usgs.gov/nwis/inventory/?site_no=335616116574901
3S/2E-07P1S	335513116490601	SGPWA monitoring well	Site 8			X			33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490601
3S/2E-07P2S	335513116490602	SGPWA monitoring well	Site 8			X			33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490602
3S/2E-07P3S	335513116490603	SGPWA monitoring well	Site 8			X			33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490603
3S/2E-07P4S	335513116490604	SGPWA monitoring well	Site 8			X			33.9214833	-116.8184167	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490604
3S/2E-15P1S	335423116455301	SGPWA monitoring well	Site 9		X				33.9064170	-116.7648890	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455301
3S/2E-15P2S	335423116455302	SGPWA monitoring well	Site 9		X				33.9064170	-116.7648890	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455302
3S/2E-15P3S	335423116455303	SGPWA monitoring well	Site 9		X				33.9064170	-116.7648890	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455303
3S/1E-10N1S	335515116522801	Production well				X			33.9064170	-116.7648890	http://waterdata.usgs.gov/nwis/inventory/?site_no=335515116522801
3S/3E-09M1	335525116410201	SGPWA monitoring well	Site 11	X				X	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410201
3S/3E-09M2	335525116410202	SGPWA monitoring well	Site 11	X				X	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410202
3S/3E-09M3	335525116410203	SGPWA monitoring well	Site 11	X				X	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410203
3S/3E-09M4	335525116410204	SGPWA monitoring well	Site 11	X				X	33.9236111	-116.6840000	http://waterdata.usgs.gov/nwis/inventory/?site_no=335525116410204

State Well number	USGS site number	Well Type	Site name	Sampling year	Latitude (NAD83)	Longitude (NAD83)	Link to USGS online data containing site, water-quality, and water-level data
3S/3E-08L1	335530116413701	SGPWA monitoring well	Site 12	X	X	33.9252222 -116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413701
3S/3E-08L2	335530116413702	SGPWA monitoring well	Site 12	X	X	33.9252222 -116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413702
3S/3E-08L3	335530116413703	SGPWA monitoring well	Site 12	X	X	33.9252222 -116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413703
3S/3E-08L4	335530116413704	SGPWA monitoring well	Site 13	X	X	33.9252222 -116.6936667	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116413704
3S/2E-11H1	335534116441501	SGPWA monitoring well	Site 13	X	X	33.9261667 -116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441501
3S/2E-11H2	335534116441502	SGPWA monitoring well	Site 13	X	X	33.9261667 -116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441502
3S/2E-11H3	335534116441503	SGPWA monitoring well	Site 13	X	X	33.9261667 -116.7377222	http://waterdata.usgs.gov/nwis/inventory/?site_no=335534116441503

¹Well 3S/2E-09E1S was non-operational during sampling in FFY22.