

EXHIBIT A SCOPE OF WORK

1. SERVICES OVERVIEW:

- A. The United States Geological Survey (USGS) agrees to provide the State Water Resources Control Board (Water Board) with all labor, materials, and supplies needed to conduct research as described herein:

The USGS shall collaborate with the Water Board to characterize and monitor groundwater priority areas, in support of the implementation of the Regional Monitoring Program¹.

The USGS shall conduct scientific investigations to identify potential groundwater priority areas, which shall include the following activities:

- i) Characterizing the risk of any fluid related to oil and gas development that migrates into waters of beneficial use, while prioritizing the monitoring of water that is (or has the potential to be) a source of drinking water, and
- ii) Establishing monitoring networks, to provide early warning in high priority areas.

2. LOCATION OF SERVICES:

- A. The work shall be performed at various locations. Sample and data analyses shall be performed at USGS offices and contract laboratories in California and other states, which may include Colorado, Virginia, Connecticut, and North Carolina. Field work to collect new data shall be conducted in and near selected oil fields in Kern, Kings, Los Angeles, and/or Ventura Counties in California.
- B. The work shall be provided during normal USGS working hours, including the core business hours of 9:00 AM to 3:00 PM, Monday through Friday, excluding Federal and State holidays. The USGS shall allow remaining hours to be worked before or after the core period.

3. PROJECT REPRESENTATIVES:

- A. The Project Representatives during the term of this Agreement shall be:

State Water Resources Control Board	United States Geological Survey
Section/Unit: Oil and Gas Monitoring Unit I	Section/Unit: California Water Science Center, California Oil, Gas, and Groundwater Project Group
Contract Manager: Dori Bellan	Project Director: Matthew Landon
Address: 1001 I Street, 15 th Floor Sacramento, CA 95814	Address: 4165 Spruance Road, Suite 200, San Diego, CA 92101
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¹ https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/

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Either party may make changes to their Project Representative by giving ten (10) days written notice to the other party. Said changes shall not require an Amendment to this Agreement.

4. Time Frame of this Agreement

A. Agreement Parts

This Agreement is a multi-fiscal year agreement, including state Fiscal Years (FY) 21/22, 22/23, and 23/24. Each of these funding fiscal years is referred to as a “Part” in this Agreement. Each Part is associated with a distinct color throughout the work scope and deliverable schedule (Figure 1).

B. Start and End Dates

Each “Part” in this Agreement has a specific start and end date associated with its funding appropriation. Figure 1 displays these “Parts”, with the overlap, of these funding fiscal years. The ending dates for each Part are also indicated. Note Part One will begin upon agreement approval and signature, which may be after July 1, 2021.

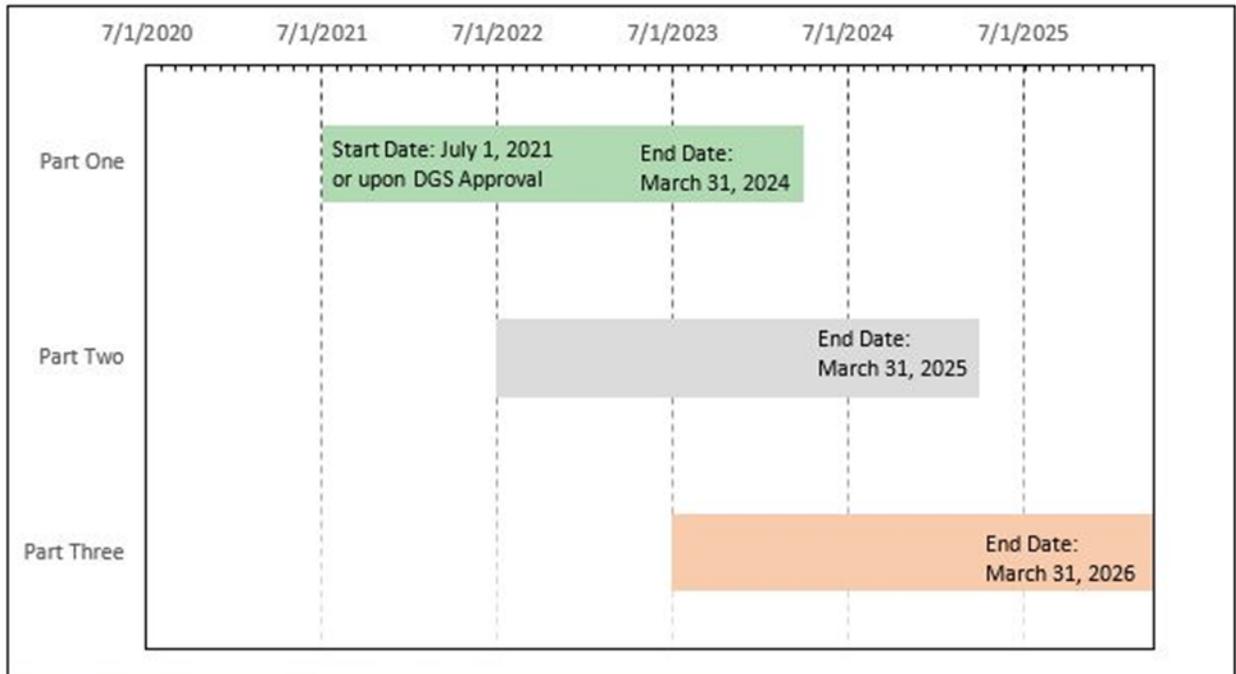


Figure 1. Funding fiscal years (FY) corresponding to start dates and end dates.

Figure 1. Funding State fiscal years (SFY) corresponding to start dates, end dates, and corresponding “Parts.”

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5. WORK TO BE PERFORMED:

A. Background and Goals

Senate Bill 4 of 2013 (SB4) mandated that the Water Board design and implement groundwater monitoring programs to assess potential effects of well stimulation treatments used to increase oil/gas reservoir permeability on California's groundwater resources. These well stimulation treatments include hydraulic fracturing, acid matrix stimulation, and acid fracturing. On July 7, 2015, the Water Board adopted [Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation](#) (Model Criteria). The Model Criteria outlined a program for regional groundwater monitoring to be implemented by the Water Board (Regional Monitoring Program) and the methods to be used for assessment, sampling, and analytical testing for area-specific monitoring by oil and gas well operators.

B. Tasks and Deliverables

The USGS shall prepare reports containing groundwater-quality data, and other electronically compiled information, such as well completion information, and presentation materials. In addition, the USGS shall provide electronic draft reports to the Water Board Contract Manager for review. The USGS shall provide technical assistance, and conduct monitoring, and assessment activities in accordance with the requirements specified below:

- i) The USGS shall ensure that reports contain the following title: "Oil and Gas Regional Monitoring Program."
- ii) The USGS shall examine existing water sampling data, published manuscripts, and any ongoing studies relevant to regional groundwater quality and monitoring in the selected study areas prior to implementing water sampling. The USGS shall ensure that reports and other documents prepared acknowledge this data, references, and ongoing research.
- iii) Prior to implementing sampling in any given geographic area, the USGS shall contact the Water Board, local agencies, oil and gas operators, and property owners to inform them of water sampling or geophysical data collection activities and, if required, obtain their permission to begin work. In addition, the USGS shall work with Water Board staff to identify where there is overlap between the sampling required for this project, and monitoring required under other regulatory programs, in order to most cost-effectively conduct monitoring and leverage existing information to focus new data collection in areas where it is most needed.
- iv) The USGS shall work collaboratively with the Water Board to ensure that all peer reviewed data is publicly available (including online data releases, maps, presentations, abstracts, and graphs.)

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- v) Work in this agreement is divided between the five fiscal year periods 21/22, 22/23, and 23/24 (Parts one, two, and three). Deliverables are numbered in the following way:

Task.Agreement Part.Deliverable (Example: 2.3.1)

Task 1: Project Management and Administration

- 1.1 The USGS shall be responsible for carrying out (1) construction of databases and scientific analysis of existing information from oil and gas well records for use in groundwater salinity and aquifer characteristics mapping and planning of new data collection to fill gaps in information, and (2) sample analysis. The USGS shall notify the Water Board Contract Manager of events or proposed changes that could affect the scope, or schedule of work performed under this Agreement. No changes shall occur without approval of a formal amendment.
- 1.2 The USGS shall provide all technical and administrative work needed for Agreement completion. Additionally, the USGS shall monitor, supervise, and review all work performed, and coordinate budgeting and scheduling to ensure that the Agreement is completed within the budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.
- 1.3 The USGS shall coordinate with Water Board staff to determine which oilfields and regions to address regarding sample collection, analysis, and data reporting. The USGS shall participate in Oil and Gas Program monthly briefings and provide Water Board staff review opportunities prior to distribution of groundwater monitoring data to the public. At times monthly briefings may not be needed because other information meetings or presentations are occurring; the timing of the briefings will be closely coordinated with Water Board staff. The USGS shall ensure that work includes coordination with other agencies, including the California Geologic Energy Management Division (CalGEM), the Department of Toxic Substances Control (DTSC) and other California Environmental Protection Agency (CalEPA) agencies, local water management agencies, and stakeholders. The USGS shall ensure that presentations of data (e.g., meetings, reports, posters, media releases and interviews, and public presentations) credits and recognizes the Water Board's Oil and Gas Regional Monitoring Program and cooperative interagency efforts.

Task 1 Deliverables:

- Quarterly progress reports (in electronic format)
- A final report (in electronic format)

Task 2: Subsurface Salinity Mapping, Including Analysis of Existing Water Sample Data, Estimating Salinity from Existing Borehole Geophysical Logs, and Analysis of Newly Collected Surface/Airborne Electromagnetic Geophysical Data.

- 2.1 The USGS shall, in collaboration with the Water Board, map the distribution of salinity in groundwater. The USGS shall use three approaches to map salinity:

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- Analysis of existing water sample data;
 - Analysis of existing borehole geophysical logs to estimate salinity; and
 - Analysis of newly collected airborne and ground-based electromagnetic (EM) geophysical data in selected areas.
- 2.2 In proximity to the selected oilfields, the USGS shall prepare a delineation of water resources with less than 3,000 milligrams per liter (mg/L) total dissolved solids (TDS), between 3,000 and 10,000 mg/L TDS, greater than 10,000 mg/L TDS, and the location of approximate boundaries between these zones.
- 2.3 The USGS shall use existing water sample data to provide a foundation for reconnaissance mapping of salinity distributions in oil fields in California categorized as having a high priority for regional monitoring based on analysis by the USGS and Water Board in 2015. The existing water sample data will be combined with additional well perforation depth data compiled as part of task 4.1 to conduct detailed mapping of salinity distributions for selected oil fields in Kern, Monterey, Santa Barbara, Ventura, Los Angeles, and other counties as needed. Based on the results of the analysis of the existing data, in selected areas the USGS shall supplement the data with a collection of new water sample data gathered as part of Task 4.
- 2.4 The USGS shall map salinity distributions using borehole geophysical log data for selected oil fields. A student research team at California State University, Sacramento (CSUS) lead by Dr. David Shimabukuro is playing a vital role in data acquisition and management by cataloging data from scanned CalGEM well and geophysical log files. The resulting well construction and geophysical data will be combined with other sources of salinity data in visualizations of three-dimensional (3D) salinity distributions overlying and surrounding selected oil fields. Additionally, the USGS shall work with the Water Board to ensure peer reviewed data is available to the public.
- 2.5 The USGS shall employ surface and airborne EM methods to map salinity distributions in groundwater in selected rural areas without a high density of buried pipes or wires or power lines; these approaches will be applied in agricultural areas adjacent to oil field study areas located in the western San Joaquin Valley in Kern County, (these methods cannot be used in oil fields or urban areas). Surface or airborne EM data will be used to develop visualizations of salinity and aquifer layers adjacent to the selected oil fields. These visualizations will be developed in combination with previous analysis of water sample and borehole data.

Task 2 Deliverables to be provided in electronic formats:

- Maps, graphs, cross-sections and/or 3D visualizations showing the salinity distributions in groundwater (using estimates from surface and airborne geophysical data, borehole geophysical logs, and water sample data) and presentations of these results to the Water Board.
- Peer-reviewed, publicly available information, including online data releases, maps, presentations, abstracts, and graphs.

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- Draft copies of manuscripts, submitted to the Water Board for review during the scientific review process and prior to publication.
- At least four (4) final manuscripts.
- At least four (4) final data releases.

Task 3: Groundwater priority area analysis

The USGS shall collaborate with the Water Board to conduct regional monitoring and assessment of groundwater zones overlying and adjacent to oilfields that may be impacted by the movement of oil and gas production related fluids (groundwater priority area). This analysis includes the following subtasks:

- Collection, management, and analysis of existing data.
- Groundwater sampling and analysis.
- Oil-field water and gas sampling and analysis.

- 3.1 The USGS shall compile existing data to analyze the groundwater priority areas including oil well construction, well integrity, injection and production volumes, pressures, and altitudes of geologic layers from CalGEM records; groundwater-level data, and the location/depth of water wells from Department of Water Resources (DWR) records or other sources; and historical groundwater and oil-field water and gas chemistry data from many sources. This data compilation will occur in selected oil fields in Kern, Kings, Monterey, Santa Barbara, Ventura, and Los Angeles Counties as well as regional compilations of data in multiple oil fields. The student research team at CSUS is populating databases with oil well construction data and ancillary data related to well operations and integrity, providing inventories of borehole geophysical logs (see Task 2), and data on injection volumes and pressures. In addition, CSUS students and USGS project team employees are digitizing borehole geophysical logs that provide data for salinity mapping (Task 2) and understanding the hydrogeologic framework for groundwater flow and quality. Members of the USGS team are compiling ancillary data including groundwater level data and locations and depths of water wells from DWR well completion reports (drillers' logs), and historical groundwater quality from all available federal, state, and local sources. SB4 local-area monitoring data from GeoTracker are being analyzed to discern trends over time and relate water chemistry to potential explanatory variables. Overall, the quality-assured data sets built, organized, and analyzed through the CSUS & USGS collaborative efforts shall support ongoing monitoring and assessment efforts by the Water Board.
- 3.2 The USGS shall compile numerical data on well construction and geologic layer marker depths into databases from existing scanned images of well records. The USGS shall ensure that this data is analyzed, quality-assured, and cross-compared in graphs, maps, and other data 2D and 3D visualizations. These visualizations and analyses of all available data will be used to select locations and zones to include in regional groundwater monitoring. The well selection will occur according to a scientific plan designed to understand how groundwater quality changes along regional groundwater flow paths overlying or adjacent to oil fields.

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- 3.3 The USGS shall prepare the designs for the spatial distribution of monitoring within groundwater priority areas for two scales of investigation: (1) groundwater-quality surveys across particular oil fields, and (2) analysis of relations of groundwater quality to potential explanatory factors using sample data collected from focused areas or many oil fields. For oil-field water-quality surveys, wells will be selected, when possible, to allow monitoring of groundwater at shallow, intermediate, and deep depths, along multiple flow paths extending from groundwater overlying oil and gas deposits in an oil field, to the mapped boundary of the oil field, and to be down-gradient. These water-quality surveys will be conducted in approximately two oil field study areas. For analysis of relations to explanatory factors, wells in focused areas or multiple oil-field areas will be selected based their characteristics, with respect to factors that may influence the occurrence of potential oil and gas derived fluids in groundwater. Factors analyzed may include, within a specified radius of each sampled well, density of oil wells, number of oil wells with casing or other integrity issues noted in well records, volume of injection for produced water disposal and/or enhanced recovery, net volume of injection (injection – production); the vertical and lateral proximity of sampled groundwater and oil-field infrastructure; hydrologic factors such as rates of recharge and groundwater withdrawals and hydraulic gradients; geologic factors such as thickness of confining layers and productive sands and occurrence of oil and gas deposits in aquifers; and co-occurring combinations of these factors (such as net injection and proximity). The explanatory factor analysis will be designed to discern relations of groundwater quality to potential controlling factors using geochemical and statistical analysis. The USGS shall also prepare the design for wells selected to evaluate changes in groundwater chemistry over time as part of an effort to better understand processes controlling groundwater quality near oil fields. The wells selected for monitoring changes over time will include those that show previous evidence of potential oil and gas fluids; evidence of changes in water quality, pressure, or temperature over time; or are located in close proximity to potential risk factors.
- 3.4 During the monitoring network design process for each studied oil-field(s), analysis to identify explanatory factors, or monitoring of changes over time, the USGS shall consult with the Water Board and stakeholder groups identified by the Water Board to coordinate monitoring with other state and local programs such as the Irrigated Lands Regulatory Program and Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS). It is anticipated that wells used in other monitoring programs may not be deep enough to provide complete coverage for the Regional Monitoring Program and some existing deep wells or newly drilled wells will need to be added to existing well networks to provide complete 3D coverage.

The USGS shall collect approximately eighty (80) groundwater samples from existing water supply or monitoring wells, newly drilled monitoring wells, or wells sampled for changes over time, in groundwater study areas near selected oil fields. These samples will be collected from oil-field study areas in Kern, Kings, Monterey, Santa Barbara, Ventura, and/or Los Angeles Counties, explanatory factor study areas, and from wells monitored for changes over time. The USGS shall collect depth-dependent flow, and water chemistry profiles from long-screened production wells if available wells are insufficient for evaluating vertical profiles of water chemistry in the

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- aquifer. Collection of groundwater samples from existing wells requires cooperation from well owners. If the USGS and the Water Board cannot obtain the necessary cooperation from well owners, the number and locations of wells samples will need to be altered. Inability to obtain permission to sample wells in critical locations may significantly affect the results of the project. If sufficient well owner cooperation cannot be obtained, the USGS shall work collaboratively with the Water Board to revise the Scope of Work as appropriate.
- 3.5 The USGS shall design and implement produced water, pond, and injectate sampling (mixtures of produced waters and other waters injected into oil fields for enhanced oil recovery or waste disposal purposes) to characterize their geochemical signatures, which includes a diverse set of chemical constituents (see analyte list in deliverable 3.7). This effort shall be coordinated with produced water and pond sampling efforts of the Regional and Water Boards, CalGEM, other CalEPA agencies, and oil and gas companies and their consultants operating oil field infrastructure (hereinafter defined as operators). The intent of the produced water sampling is to augment existing efforts by putting the data in a 3D context and to provide additional gas and isotopic data.
- 3.6 The USGS shall assist the Water Board with compilation, analysis, and interpretation of the historical data on oil-field water and gas samples collected by the Regional and Water Boards, CalGEM, and oil and gas operators and develop numerical datasets from data previously only available in scanned formats. The USGS shall collect samples from selected sites to augment these data. The USGS shall collect and analyze approximately ten (10) produced water, pond, or injectate samples per year as part of 3D characterization, in addition to coordination with sampling conducted for other regulatory and monitoring programs. Coordination with produced water sampling activities of other organizations/efforts will enable the new produced water data collection for the regional monitoring program to be optimized to fill gaps and understanding in existing information. The USGS shall work collaboratively with the Water Board to select sample sites which will provide a 3D understanding of produced water, pond, and injectate sample chemistry, and span a range of oil field operational conditions. The oil-field sampling sites will not necessarily be limited to those fields concurrently being evaluated for groundwater zone priority but will be distributed according to a regional characterization strategy. Specific analytes in this deliverable include: noble and atmospheric gases, hydrocarbon gas isotopes, and solute isotopes (strontium, boron, lithium). Implementation of the produced water sampling program requires cooperation from oil and gas operators. If the USGS and the Water Board cannot obtain the necessary cooperation from the oil and gas operators, then new sampling for produced water characterization will be impossible to complete as described in this section. In that case, USGS shall work collaboratively with the Water Board to replace these samples with an equivalent number of groundwater samples.
- 3.7 The USGS shall collect the following samples for analysis, to provide an ensemble of groundwater-quality and oil-field water/gas data about the regional extent and distribution of constituents potentially derived from oil and gas activities. Analysis shall be done by USGS laboratories, commercial laboratories with USGS contracts,

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or university laboratories with which USGS has Cooperative Agreements. The reason for these Cooperative Agreements with university laboratories is that neither USGS nor commercial laboratories are equipped to analyze some constituents in produced water samples which may contain up to 15% oil and TDS up to 50,000 mg/L.

- A complete suite of dissolved hydrocarbons and other volatile organic compounds (VOCs) using the low-level detection methods available through the USGS's laboratories; the VOCs include constituents that could be associated with oil and gas sources;
- Dissolved combustible gases - short-chain hydrocarbons (C1-C6) and their isotopic ratios, which can serve as indicators for impacts of oil and gas sources on groundwater resources;
- Dissolved organic carbon and optical properties of organic matter that may be used to identify different sources of organic carbon;
- Dissolved gases that may be used as tracers - noble gases, atmospheric gases;
- Isotopic tracers, such as stable isotopes of water, carbon isotopes of dissolved inorganic carbon, strontium, and boron isotopes, for determining sources of water and salts;
- Major ions, trace elements, nutrients, and additional dissolved halogens (iodide and bromide) for determining sources of salinity;
- Naturally occurring radioactive materials which can be used as tracers of water from oil and gas zones compared with other sources; and
- Groundwater age tracers, including tritium, helium-3, carbon-14, and sulfur hexafluoride, which can be used to help understand rates of water movement and groundwater sources and vulnerability.

Task 3 Deliverables:

- Maps, graphs, and/or 3D visualization, showing the distribution of the chemistry of groundwater, and of oilfield water and gas.
- The USGS shall provide the Water Board with periodic presentations showing these results.
- At least three (3) electronic final manuscripts.
- Electronic Draft Copies of Manuscripts. At least six (6) electronic data releases. Water-quality data (delivered to the Water Board in a GeoTracker compatible format).

Task 4: Drilling and site monitoring

The USGS shall collaborate with the Water Board to install new monitoring sites and collect data at these sites to fill gaps in information necessary to conduct regional monitoring and assessment of groundwater zones overlying and adjacent to oilfields that may be impacted by the movement of oil and gas production related fluids (groundwater priority area). This analysis includes the following subtasks:

- Drilling and installation of new monitoring wells.

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- Monitoring water levels and other data over time at installed monitoring wells.
- 4.1 The USGS shall identify gaps in monitoring data using existing wells. There are a limited number of wells available for monitoring between groundwater zones in the upper few hundred feet below ground surface (bgs) and oil wells perforated thousands of feet bgs.
 - 4.2 The USGS shall analyze existing data and collect new water sample data from existing wells to determine the requirements for installing new monitoring wells. The objective is to plan for new monitoring well installation where regional flow systems cannot be sampled by existing wells. New wells will likely require construction enabling sampling at multiple depths. The USGS shall plan, select sites, permit, and make supply purchases.
 - 4.3 The USGS shall select monitor well sites, obtain permits, identify targeted monitoring zones, and complete logistical and supply arrangements in preparation for drilling and well construction to begin. The USGS shall coordinate with the Water Board throughout the planning, design, permitting, and preparation process.
 - 4.4 The USGS shall provide a PowerPoint presentation describing drilling/well installation plans within the scope of the regional monitoring design to the Water Board and interagency/stakeholder committees coordinating groundwater monitoring programs in advance.
 - 4.5 The USGS shall install one or more monitoring sites in a regional monitoring area during each Part of the agreement. The depth drilled may range between 100 and 3,500 feet, and the number of monitoring wells may range between one (1) to five (5) per site. Monitoring wells will be constructed, developed, and permitted in accordance with applicable local well ordinances and California Well Standards. The USGS shall also document waste management and disposal procedures. During the drilling, the USGS shall collect lithologic and advanced borehole geophysical logs and use the data to decide on the precise monitoring well perforation depths, and borehole seals between depths. The USGS shall subject monitoring wells installed at different depths in aquifers at these sites to rigorous development and hydraulic testing, in order to verify that the monitoring wells at different depths are isolated and not compromised by borehole short circuit pathways.
 - 4.6 The USGS shall periodically monitor groundwater levels to determine vertical hydraulic gradients at multiple well monitoring sites, and changes in water levels over time. This information supports understanding groundwater quality. The monitoring includes maintenance of instruments recording hourly water levels in monitoring wells previously installed as part of the Regional Monitoring Program, data processing, review and approval of the data, and posting of the data to the USGS website.
 - 4.7 Drilling, geophysical logging, and water-level data will be publicly available from USGS websites after data review and approval. In addition, the USGS shall collect water chemistry data from new, multiple well monitoring sites about 6 to 12 months

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after drilling and development, according to USGS best practices for groundwater monitoring.

Task 4 Deliverables:

- The USGS shall provide the Water Board with periodic presentations showing analysis results from Task 4.
- Provide hydrologic and geologic data from multiple well monitoring sites available online from USGS websites.
- At least one (1) electronic final manuscript
- Electronic draft copy(s) of manuscript(s)

6. TASK AND DELIVERABLES SCHEDULE:

- A. The schedule of deliverables described above are listed in Exhibit B, Table 1 and Figure 2, below. Exhibit B, Table 1, lists the deliverables included in this Agreement by task and subtask number, the due date for each deliverable, the cost for each deliverable, and the Part of the Agreement each deliverable shall be billed to. Exhibit A, Figure 2. is a chart showing the quarter in which each deliverable is due and the Agreement Part to which the deliverable is billed. Deliverable due dates are generally the last day of the quarter.
- B. The USGS shall complete quarterly progress reports and submit them electronically to the Water Board Contract Manager by the end of the second month following the end of the calendar quarter (May, August, November, and February). The USGS shall maintain regular communication with the Water Board Contract Manager. The USGS shall ensure that progress reports describe activities undertaken and accomplishments of each task during the quarter, milestones achieved, and any problems encountered. Additionally, the USGS shall ensure the description of activities and accomplishments for each task during the quarter contains sufficient detail. The USGS shall ensure that the final quarterly report describes all work performed under this Agreement.
- C. The USGS shall provide presentations on plans, to summarize findings and study progress. The USGS shall schedule these presentations upon approval of the Water Board Contract Manager.
- D. The USGS shall prepare manuscripts summarizing and integrating results of Tasks 2, 3, and 4. The number of manuscripts and the format of the publications (series report, factsheet, journal article) will be determined by the Water Board. At least one (1) synthesis manuscript shall be produced. Electronic draft copies of manuscripts shall be submitted to the Water Board for review during the scientific review process, and prior to publication.
- E. The USGS shall coordinate with the Water Board to review monitoring results and assessments. Formal reports on the status and findings of the Regional Monitoring Program are anticipated to be prepared on at least a biennial (every other year) basis. Adjustments to the Regional Monitoring Program elements may be necessary periodically as data and information are evaluated.

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Calendar Year	2022				2023				2024				2025											
Tasks	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Agreement Dates																								
19-050-250																								
20-029-250																								
21-027-250																								
Part 1																								
Part 2																								
Part 3																								
Task 1: Management																								
Task 2: Salinity mapping																								
A. Data Compilation/Analysis																								
B. New geophysical data																								
C. Reporting																								
Task 3: Groundwater analysis																								
A. Data Compilation/Analysis																								
B. Sampling																								
C. Reporting																								
Task 4: Monitoring sites/drilling																								
A. Drilling																								
B. Continuous monitoring sites																								
C. Reporting																								

Figure 2. The quarter in which each deliverable is due and the Agreement part to which the deliverable is to be billed. All deliverables shall be submitted in electronic format.

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7. USGS Fundamental Science Practices

All deliverables shall comply with the relevant policies of USGS Fundamental Science Practices (USGS FSP, <https://www2.usgs.gov/fsp/policies.asp>). USGS FSP requires an internal review process for reports, and as implemented by the California Water Science Center, this process consists of the following steps:

- A. Supervisory review
- B. USGS peer/colleague review, USGS water quality specialist and data management specialist reviews (USGS-series reports) or journal peer review (journal articles), and Water Board courtesy review. These reviews may be concurrent or sequential depending on the report.
- C. Program Chief approval review.
- D. Editorial review and illustration services by Publications group (USGS-series reports).
- E. USGS California Water Science Center and Bureau-level approval reviews.
- F. Layout and production by Publications group for USGS-series reports or by the journal. Review of publication proofs includes a second review by Water Board staff.
- G. The USGS shall provide draft versions of the report deliverables specified in this Agreement to the Water Board and other colleague reviewers up to 90 days before publication (step B of the above review process). The Water Board and other reviewers shall be provided time and venue to review, comment, and discuss aspects of the reports, and the USGS shall respond thoroughly to all reviews. The USGS shall keep the Water Board informed about the progress of reports through the review and approval process. Reports shall be considered complete when the final version has received official USGS approval (step E), and the Water Board has access to the final version online or in hard copy. Final reports shall be made publicly available through the USGS and Water Board websites, and if a report is a journal article, then it shall be published in open-access form.