COLUSA SUBBASIN

CGA/GGA Joint Board Meeting Packet

September 19, 2025

Joint Colusa Groundwater Authority and Glenn Groundwater Authority Board of Directors

Special Meeting Agenda

September 19, 2025 | 1:00 p.m.

PCDSA Conference Room, 225 N. Tehama St., Willows, CA 95988

Alternate Meeting Locations:
244 SE Piper Dr., Holt, MO 64048
344 E. Laurel Street, Willows, CA 95988

A live online viewing/listening only option is being offered via Microsoft Teams
Join the meeting now
Meeting ID: 290 667 873 242 5 | Passcode: EX9Ur38S
Dial in by phone
+1 323-676-6164,,570874608# United States, Los Angeles | Find a local number
Phone conference ID: 570 874 608#
Need help?

Please note that when you access the online meeting, you will be placed into a waiting room and admitted into the meeting by the Meeting Host. Public comment will only be taken in person or via email, there will be no option to provide public comment on the remote platform. In addition, if the remote viewing/listening option is interrupted or compromised, the meeting will continue in person.

***** Indicates an Action Item

1. Call to Order, Roll Call, and Introductions
2. Approval of Minutes (pg. 4)
    a. *April 18, 2025 CGA/GGA Joint Board Special Meeting Minutes (CGA/GGA) (to be distributed under separate cover)
    b. *June 13, 2025 CGA/GGA Joint Board Special Meeting Minutes (CGA/GGA) (to be distributed under separate cover)
3. Period of Public Comment

    At this time, members of the public may address the Board Members regarding items that are not on the agenda but are of relevance. The Boards may not act on items not on the agenda.
4. *Authorize Staff to Coordinate with Chairmen and Counsel to Develop and Send a Comment Letter to Department of Water Resources on the Draft Land Subsidence Best Management Practices.
5. Water Year 2025 Annual Report Task Order (pg. 5)
    a. *Approve Colusa Subbasin GSP Annual Report Update Project #1173.03.04 in an amount not to exceed $59,200 without prior approval. (CGA Action)
    b. *Approve sharing cost of Colusa Subbasin GSP Annual Report Update Project #1173.03.04 between Davids Engineering Inc., and Colusa Groundwater Authority

in an amount not to exceed $29,600 (50 percent of total cost) without prior approval. (GGA Action)

6. Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement (pg. 62)
    a. *Approve Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $438,000 without prior approval. (CGA or GGA action)
    b. *Approve sharing cost of Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $219,000 (50 percent of total cost) without prior approval. (CGA or GGA action)
7. Groundwater Demand Management Program Development (5 minutes) (pg. 71)
    a. Receive updates from staff on RFQ for Development and Implementation of a Water Accounting System.
8. Domestic Well Mitigation Program Development (60 minutes) (pg. 73)
    a. Receive recommendations from CGA/GGA Joint Domestic Well Mitigation Ad Hoc Committee, discuss, and provide direction to the Committee and staff on next steps.
9. Colusa Subbasin Outreach (15 minutes) (pg. 91)
    a. Receive update on Colusa Subbasin Outreach Plan development and proposed next steps.
10. Review Meeting Schedule and Next Steps (5 minutes)
11. Member Reports and Comments
12. Adjourn

Note: Times listed on the agenda are for estimation purposes only.

A complete agenda packet, including back-up information, is available for inspection during normal business hours at 1213 Market Street, Colusa, CA 95932 or 225 N. Tehama St., Willows, CA 95988. The full agenda packet can also be found on the CGA and GGA websites: https://colusagroundwater.org/agendas-and-meetings-2025/; https://www.countyofglenn.net/glenn-groundwater-authority/meetings

In compliance with the Americans with Disability Act, if you require special accommodation to participate in this meeting, please contact the Carol Thomas Keefer, CGA Program Manager, at 650-587-7300 X17 or Glenn County Water Resources Division at 530-934-6540 prior to any meeting and arrangements will be made to accommodate you.

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 2. Approval of Minutes

Date: September 19, 2025

Background

The April 18, 2025 CGA/GGA Joint Board Special Meeting Minutes and the June 13, 2025 CGA/GGA Joint Board Special Meeting Minutes will be **distributed under sperate cover**.

Recommendation

CGA & GGA Action: Approve the April 18, 2025 CGA/GGA Joint Board Special Meeting Minutes.

CGA& GGA Action: Approve the June 13, 2025 CGA/GGA Joint Board Special Meeting Minutes.

Attachments

- None

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 5. Water Year 2025 Annual Report Task Order

5.a. *Approve Colusa Subbasin GSP Annual Report Update Project #1173.03.04 in an amount not to exceed $59,200 without prior approval. (CGA Action)

5. b. *Approve sharing cost of Colusa Subbasin GSP Annual Report Update Project #1173.03.04 between Davids Engineering Inc., and Colusa Groundwater Authority in an amount not to exceed $29,600 (50 percent of total cost) without prior approval. (GGA Action)

Date: September 19, 2025

Background

In 2022, the Glenn Groundwater Authority (GGA) and Colusa Groundwater Authority (CGA) issued a request for proposals (RFP) for the Development and Submittal of the Colusa Subbasin Water Year 2022 Groundwater Sustainability Plan Annual Report. The CGA and GGA selected Davids Engineering and Luhdorff & Scalmanini Consulting Engineers (LSCE) (collectively the DE Team) to complete the Water Year 2022 Annual Report, including an optional task for Annual Report Preparation and submittal for Water Years 2023-2025.

The proposed task order is consistent with the original proposal including the cost of $59,200 noted in the Table 4 (proposal page 13). Subtasks include:

1. Data Collection, Compilation, and Analysis
2. Prepare Annual Report
3. Annual Report Submittal
4. Meetings and Outreach
5. Project Management

The master contact is held by the CGA. In past years, the CGA and GGA have split the cost on a 50/50 basis. The same format is being recommended for the Water Year 2025 Annual Report.

Recommendation

1. CGA Action: Approve Colusa Subbasin GSP Annual Report Update Project #1173.03.04 in an amount not to exceed $59,200 without prior approval.
2. GGA Action: Approve sharing cost of Colusa Subbasin GSP Annual Report Update Project #1173.03.04 between Davids Engineering Inc., and Colusa Groundwater Authority in an amount not to exceed $29,600 (50 percent of total cost) without prior approval.

Attachments

- Davids Engineering Task Order 1173.03.04, Colusa Subbasin GSP Annual Report Update

Task Order for Professional Engineering Services

To:	Carol Thomas-Keefer
	Program Manager
	Colusa Groundwater Authority
From:	Davids Engineering, Inc.
	www.davidsengineering.com
Date:	9/19/2025
Project name:	Colusa Subbasin GSP Annual Report Update
Project #:	1173.03.04

Davids Engineering, Inc. (DE or CONSULTANT) is pleased to provide this task order for professional engineering services to the Colusa Groundwater Authority (CGA or CLIENT) to complete the Colusa Subbasin Groundwater Sustainability Plan (GSP) Annual Report update for Water Year (WY) 2025 (Project). Pursuant to the Task Order Agreement for Professional Services between CLIENT and CONSULTANT dated November 17, 2023, CLIENT desires and CONSULTANT agrees to perform professional services according to the following terms.

1 Scope of Services

The scope of professional services to be performed by DE is organized into one task as described below.

Task 01: Update Colusa Subbasin GSP Annual Report for WY2025:

DE will provide CLIENT with an update to the Colusa Subbasin GSP Annual Report that will reflect the groundwater conditions in the Colusa Subbasin through WY2025. This task includes efforts consistent with past Colusa Subbasin GSP Annual Reports for WY2022 through WY2024 – as described in Section 2, "Scope of Work and Schedule" (Tasks 1-5 and 7) of the *Response to Request for Proposal*, included as Appendix A – and content consistent with the Revised Colusa Subbasin GSP, which was adopted by the CGA and Glenn Groundwater Authority (GGA) and submitted to the California Department of Water Resources (DWR) in April 2024.

Subtasks, as described in Appendix A, will include:

1. **Data Collection, Compilation, and Analysis**: This will include applicable data collected, compiled, or identified for collection as part of the Revised Colusa Subbasin GSP, including:
    - Interferometric Synthetic Aperture Radar (InSAR) data related to subsidence conditions.
    - Evaluation of subsidence-related impacts to critical infrastructure, land uses, other beneficial uses and users through outreach to a Colusa Subbasin Critical Infrastructure Working Group.

2. **Prepare Annual Report**: In addition to applicable content prepared for the WY2022 through WY2024 Annual Reports, this will incorporate content updates consistent with the Revised Colusa Subbasin GSP, including:
    - A summary of efforts and activities completed by the CGA and GGA in WY2025 to continue advancing the five-year timeline for GSP implementation.
    - Evaluation of overdraft in the Colusa Subbasin based on available data from representative monitoring site (RMS) wells.
    - Analysis of current groundwater conditions with respect to the revised sustainable management criteria (SMC), as applicable, particularly with respect to groundwater levels and subsidence.
    - Updates to projects and management actions (PMAs), as applicable, related to the Revised Colusa Subbasin GSP, including updates related to domestic well mitigation (DWM) and groundwater demand management (GDM) activities.
3. **Annual Report Submittal**: This will include submittal of the WY2025 Annual Report document and applicable materials to DWR identified as part of the Revised Colusa Subbasin GSP, including updates to PMAs through DWR's PMA Module, as available.
4. **Meetings and Outreach**: Meetings and outreach will be coordinated with other meetings and outreach as part of ongoing efforts between DE and CLIENT related to implementation support for the Revised Colusa Subbasin GSP. This coordination is intended to enhance efficiency and avoid duplicate efforts. Meetings are anticipated to include:
    - Biweekly coordination meetings with CGA and GGA staff (assuming remote participation by one DE staff member, coordinated with participation by other DE staff member(s) related to ongoing support for implementation of the Revised Colusa Subbasin GSP)
    - One presentation to the CGA and GGA Joint Technical Advisory Committee (TAC) (assuming one two-hour meeting, with participation by two DE staff members: one remote and one in-person)
    - One presentation to the joint CGA and GGA Boards (assuming one two-hour meeting, with participation by two DE staff members: one remote and one in-person)
    - One public webinar (assuming one one-hour webinar, with remote participation by two DE staff members)
5. **Project Management**.

2 Deliverables

The following deliverable(s) will be provided to CLIENT:

- One draft version of the WY2025 Colusa Subbasin GSP Annual Report.
- One final version of the WY2025 Colusa Subbasin GSP Annual Report.
- Presentation materials for the CGA and GGA Joint TAC meeting (PowerPoint presentations and associated agenda materials).
- Presentation materials for the joint CGA and GGA Board meeting (PowerPoint presentations and associated Board packet materials).
- Webinar materials (e.g., PowerPoint presentation and flyer)

3 Assumptions

Assumptions are listed in the *Response to Request for Proposal*, included as Appendix A, unless otherwise clarified below. To the extent that these assumptions do not hold true, the effort and therefore the cost and schedule required to perform the services could be affected.

- All deliverables will be provided in electronic format.
- CLIENT will provide one set of tracked change comments on all draft deliverables and there will be only one round of revisions.
- CLIENT will be the lead for all stakeholder outreach.
- CLIENT will provide required information requested by DE in a timely manner.
- CLIENT will provide to DE all relevant data and information (electronic and/or hard copy) in its possession at Project initiation.
- Any and all work performed under this proposal shall be on a time and materials basis consistent with DE's rate schedule then in effect.
- Anything outside the scope set forth herein will result in additional fees consistent with DE rates then in effect.
- Project work required and/or requested by CLIENT which is not covered in this proposal shall be paid for by CLIENT on a time and materials basis at the applicable DE Team rates then in effect.
- No cultural or environmental surveys will be completed as part of this work.
- No fieldwork will be required.
- DE reserves the right to augment the DE team with additional team members and remove team members as may be required to facilitate successful Project completion.

4 Schedule

DE proposes to complete the proposed scope of services by April 30, 2026. Work will progress to meet milestones on a timeline as defined in Table 1. Delays in the notice to proceed from CLIENT may result in corresponding delays or shifts to the subsequent milestones. Schedule implications or deviations from the milestone dates that occur during the work will be made known to CLIENT as soon as practicable.

Table 1. Timeline of project milestones.

Milestone	**Milestone Target Timeframe**
Notice to Proceed	September 19, 2025
CGA and GGA Joint TAC Presentation	Early February 2026
Draft WY2025 Annual Report	March 2, 2026
Joint CGA and GGA Boards Presentation	March 2026
Final WY2025 Annual Report	March 25, 2026
Submittal of Final WY2025 Annual Report	March 27, 2026
Public Webinar	Mid-April 2026

5 Costs

CONSULTANT costs associated with performing this task order will be billed to the CLIENT on a time and materials basis not to exceed $59,200 as summarized in Table 2 without prior written authorization, consistent with Table 4 of the *Response to Request for Proposal,* included as Appendix A. While estimated costs are based on a detailed task-by-task buildup, actual project costs will not necessarily be tracked on a task basis, nor will individual task budgets constrain charges for work performed up to the total estimated budget.

Table 2. Estimated costs to perform the scope of work.

Task	**Proposed Cost**
Task 01: Update Colusa Subbasin GSP Annual Report for WY2025	$59,200

6 Task Order Signatures

Approved for CLIENT

Signed: _____

Name: _____

Title: _____

Date: _____

Accepted for Davids Engineering, Inc.

Signed: _____

Name: _____

Title: _____

Date: _____

Appendix A

Response to Request for Proposal

November 14, 2022

Response to Request for Proposals to

Develop and Submit the Colusa Subbasin Water Year 2022 Groundwater Sustainability Plan Annual Report

Colusa Groundwater Authority and
Glenn Groundwater Authority

NOVEMBER 14, 2022

DAVIDS ENGINEERING, INC

Luhdorff & Scalmanini
Consulting Engineers

November 14, 2022

Glenn Groundwater Authority
ATTN: Lisa Hunter
225 North Tehama Street
Willows, CA 95988

SUBJECT: Response to Request for Proposals - Development and Submittal of the Colusa Subbasin Water Year 2022 Groundwater Sustainability Plan Annual Report

Dear Ms. Hunter:

We are pleased to submit this proposal to the Colusa Groundwater Authority (CGA) and Glenn Groundwater Authority (GGA) to offer our services for the Development and Submittal of the Colusa Subbasin Water Year 2022 Groundwater Sustainability Plan Annual Report (Project).

Davids Engineering, Inc. (DE) and Luhdorff & Scalmanini Consulting Engineers (LSCE) have joined together to offer the CGA and GGA a technical team of professionals that are deeply experienced in the Colusa Subbasin and have a proven record of successfully developing Groundwater Sustainability Plans (GSPs) and GSP annual reports together for numerous basins and subbasins across California. We know the Sustainable Groundwater Management Act (SGMA) requirements for annual reports, how to meet them, and how to efficiently create reporting tools and processes that maximize consistency and cost savings for future annual reports.

The DE-LSCE Team is fully qualified and ready to achieve the Project's main objective: to develop, present, and successfully submit the Water Year 2022 GSP annual report for the Colusa Subbasin. Our handpicked team combines past knowledge gained during development of the Colusa Subbasin GSP and first GSP annual report and ongoing efforts to support GSP implementation in the Colusa Subbasin and adjacent subbasins. Our resources, connections, and experience will allow us to begin work immediately and follow through effectively.

As requested, this proposal includes a summary of the DE-LSCE Team's capabilities, experience, personnel, and qualifications; our proposed scope of work and schedule for successfully completing the Project (and optional, complementary efforts); estimated costs for completing the proposed scope of work; and a copy of DE's standard contract. The DE-LSCE Team has been assembled to provide high-value support to the CGA and GGA Groundwater Sustainability Agencies (GSAs) by offering the following benefits:

In-Depth Knowledge of the Colusa Subbasin GSP and Implementation Efforts

The DE-LSCE Team knows the GSAs, member agencies, and stakeholders in the Colusa Subbasin. Our Team members were directly involved in developing and submitting the Colusa Subbasin GSP and the first GSP annual report or are currently supporting the GSAs with planning and prioritizing GSP implementation projects. We understand the community leadership, local planning, and initiatives that have led up to this Project and are sensitive to local needs and issues.

Extensive Knowledge of GSP Annual Report Development Across California

Members of the DE-LSCE Team have prepared or supported 11 annual reports for critically overdrafted basins since 2020 and 10 annual reports for medium and high priority basins during 2022. Together, the DE-LSCE Team has prepared 11 annual reports across seven subbasins. From

1095 Nelson Street, Suite 130, Chico, CA 95928 • Tel: 530.757.6107 • davidsengineering.com

our extensive experience, we understand that sound management, communication, and adhering to schedule are essential to maintain trust amongst member agencies and stakeholders.

Dedicated, Cohesive, Local Team

This project will be led by Jeff Davids, PhD, PE (DE) and Eddy Teasdale, PG, CHG (LSCE), based out of the DE and LSCE offices in Chico, CA. The DE-LSCE Team has successfully collaborated on numerous projects in the past, including annual reports in seven subbasins. DE and LSCE will work closely as an integrated team supporting each other on all tasks. We are prepared to start work immediately, directing our cohesive experience toward completing this Project in a timely and efficient manner.

Familiar with Local and Northern California SGMA Policy Implementation and Coordination

Through our many past and current projects supporting water resources management across the Northern Sacramento Valley, the DE-LSCE Team recognizes the need for local engagement and regional coordination for effective SGMA implementation. Our Team's shared insights gained from experience in Colusa, Glenn, Tehama, Butte, Sutter, and Solano Counties has taught us 1) how local Northern California stakeholders view SGMA (which is very different from firms working predominately in the San Joaquin Valley), 2) the importance of developing annual reports in a transparent way, and 3) engaging in outreach efforts and providing updates to local managers and stakeholders.

In summary, the DE-LSCE Team has the range and depth of technical capabilities and the local knowledge necessary to effectively support the CGA and GGA with developing and submitting the annual report and with communicating current conditions in the Colusa Subbasin with stakeholders.

We would welcome the opportunity to perform this important work, building upon past efforts to support the GSAs and maintain locally managed sustainable groundwater resources in the Colusa Subbasin. Please feel free to contact our proposed Project Manager, Jeff Davids at (530) 588-3064 or jeff@davidsengineering.com, should you have any additional questions about our proposal or our proposed Team.

Sincerely,

DAVIDS ENGINEERING

Jeff Davids, PhD, PE
Supervising Engineer, Project Manager

Authorized Contact	Federal Tax ID Number	Project Subconsultants
Jeff Davids, PhD, PE Supervising Engineer 1095 Nelson Street, Suite 130 Chico, CA 95926 Office: 530.757.6107. x201 Cell: 530.588.3064 jeff@davidsengineering.com	68-0346173	Luhdorff and Scalmanini, Consulting Engineers (LSCE)

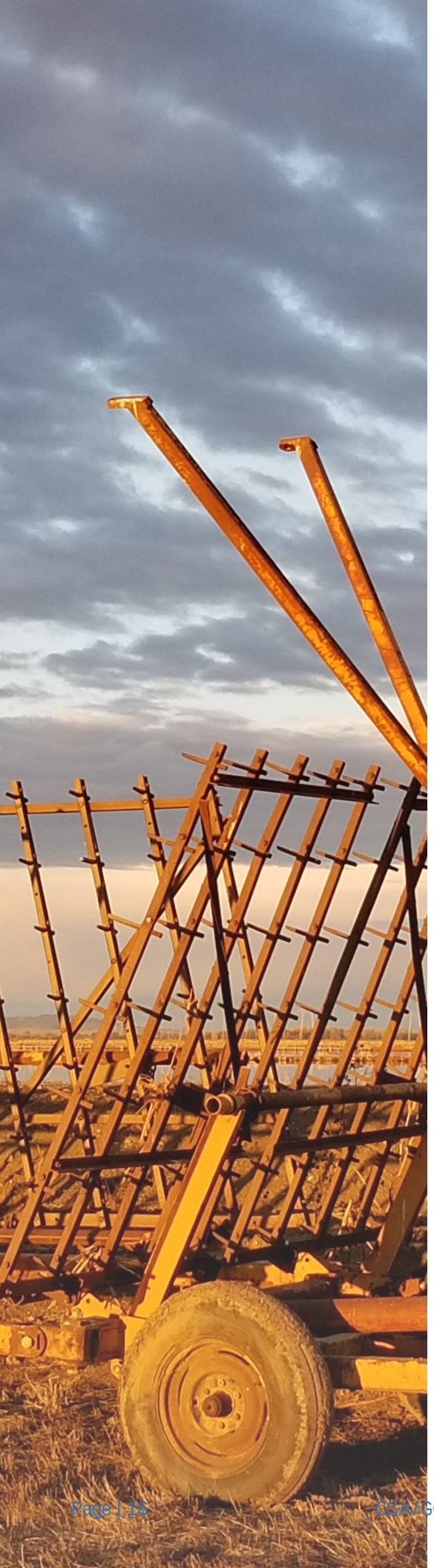


TABLE OF CONTENTS

Section 1.

Team Capabilities & Experience

This section presents the background, experience, and organizational structure of the proposed DE-LSCE Team, the roles and decision-making responsibilities of our DE-LSCE Team leader and key personnel, our past experience in successfully completing other GSP annual reports, and our resources for successfully completing this Project.

BACKGROUND AND EXPERIENCE

Both DE and LSCE are recognized leaders in Northern California water resources consulting and engineering. With local offices in Chico, Woodland, and Davis, the DE-LSCE Team understands the local and regional dynamics of SGMA implementation in the Sacramento Valley.

Members of the DE-LSCE Team have supported the GSAs and member agencies with GSP development, GSP implementation, and many of the projects and activities that will be reported in this Project. Members of our DE-LSCE Team were also directly involved in creating the first GSP annual report submitted in April 2022, which will serve as the foundation for completing this Project. These experiences offer many advantages for this Project, including:

- Greater insight into local concerns and issues expressed by stakeholders across the Colusa Subbasin.
- Existing contacts, relationships, and resources needed to successfully complete the Project.
- Enhanced continuity between past GSP reporting, ongoing GSP implementation, and future work completed for this Project.

The elements described above are ideal for the specific nature of this Project and ensure that we have the organizational structure and decision makers to complete this Project in a timely and efficient manner.

While DE and LSCE will work collaboratively as a team, DE would serve as the prime consultant and LSCE would serve as the subconsultant. Following the structure outlined in the RFP, DE's background and experience are presented first in this section, followed by LSCE's qualifications and experience.

Firm Background

DE was founded nearly 30 years ago with a focused dedication to providing excellent professional engineering and scientific services to public and private entities managing surface water and groundwater resources. The firm has grown from a sole proprietorship to a firm of over 20 professionals based in two Northern California offices in Chico and Davis. These locations enable efficient, timely responses to the needs and requests of the CGA, GGA, and stakeholders across the Colusa Subbasin. The firm's client base stretches from the southern San Joaquin Valley to the Shasta Valley and several other western states. The firm is directed by a Leadership Team of three senior professional staff, with founder Grant Davids serving as President and senior firm advisor. More information about DE can be found on the firm's website (https://davidsengineering.com/).

As a small firm, DE routinely teams with other firms, from small to large, to provide the customized set of professional services needed for each project undertaken. For this Project, we have teamed with LSCE to meet the specific needs of the GSAs during annual report development, while carrying forward the knowledge, data, and experience gained from development of the Colusa Subbasin GSP, the first GSP annual report, and GSP implementation activities.

Davids Engineering Has Proudly Served Stewards of Western Water Since 1993

Offering professional engineering and scientific services to public agencies, private entities, and landowners responsible for managing water resources in the western United States.

Founded on a commitment to the highest standards of professional integrity and intellectual honesty

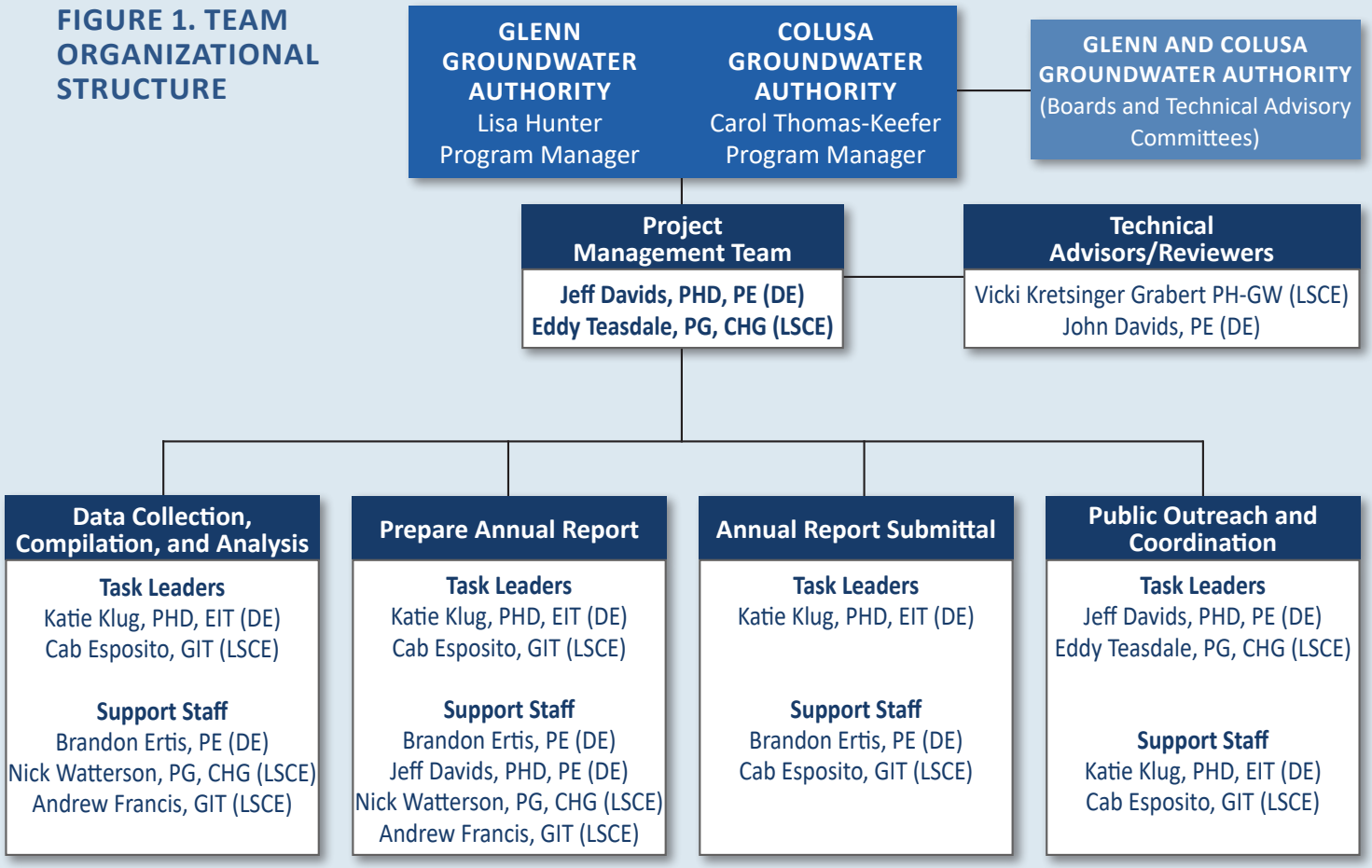
A team of professionals who are passionate and committed to helping our clients identify local solutions to managing water resources in a strategic, positive manner by seeking appropriate, responsible balances between commercial agricultural enterprise and environmental stewardship

ORGANIZATIONAL STRUCTURE, ROLES, AND DECISION-MAKING RESPONSIBILITIES

The proposed DE-LSCE Team organizational structure is illustrated below. Working under the technical direction of the CGA and GGA GSAs, our Team will be co-led by Jeff Davids, supervising engineer for DE, and Eddy Teasdale, principal hydrogeologist for LSCE. Jeff Davids is our proposed DE-LSCE Team Leader, as DE is the proposed prime consultant for contracting and administrative purposes. Eddy Teasdale will provide support in project management with emphasis on coordination of technical work. John Davids, principal engineer for DE, and Vicki Kretsinger Grabert, president of LSCE, will serve in senior advisory roles to assist in strategic Project planning and review. Other key Team members who will lead the technical efforts of specific tasks include Katie Klug (DE) and Cab Esposito (LSCE). A pool of staff and subject matter specialists from each firm is available for additional technical support. Resumes outlining each team member's relevant project experience are included in **Appendix A.**

Our Team members were selected through careful evaluation of the technical needs of this Project and selection of the most appropriate staff in each discipline. As a result, we have selected a highly qualified, experienced, streamlined group of professionals who have worked together on similar projects. All proposed team members are thoroughly familiar with SGMA and the Colusa Subbasin GSP, and are also extensively involved in sustainable groundwater management in other groundwater subbasins in California. Members of our proposed Team were also directly involved in preparing and submitting the first Colusa Subbasin GSP annual report in April 2022. Our Team's collective experience and organizational structure are advantageous to this Project as they will allow us to start work quickly and move efficiently, utilizing tools and processes that will maximize consistency, both with the first Colusa Subbasin GSP annual report and with other annual reports in neighboring subbasins. These advantages may also provide opportunities for cost savings in developing future annual reports.

FIGURE 1. TEAM ORGANIZATIONAL STRUCTURE



DE = Davids Engineering; LSCE = Luhdorff & Scalmanini Consulting Engineers

TEAM HISTORY AND EXPERIENCE PROVIDING SIMILAR SERVICES

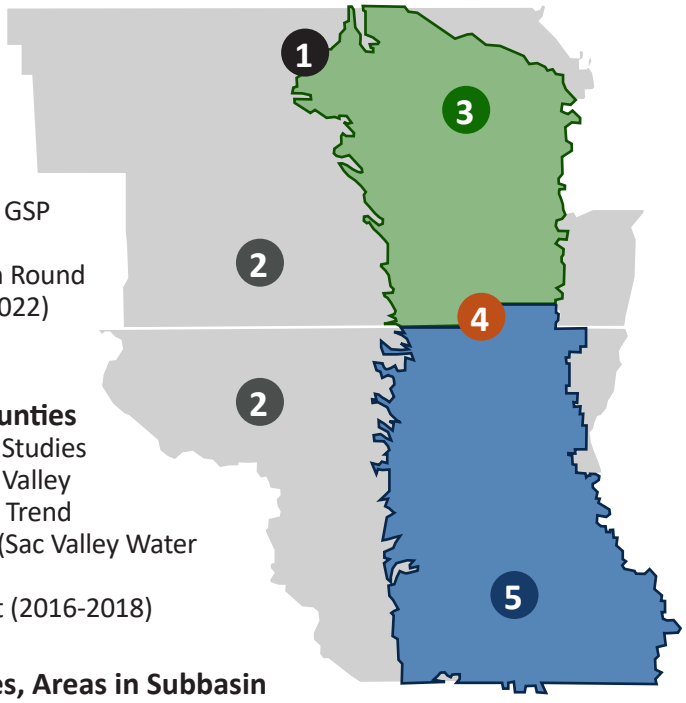
Both DE (founded in 1993) and LSCE (founded in 1980) have extensive experience with SGMA implementation, groundwater sustainability planning, and GSP annual report development, which we have cultivated and proven through many past projects across California (Table 1). The DE-LSCE Team has also supported many past SGMA implementation initiatives in the Colusa Subbasin, as well as various other projects on behalf of member agencies and stakeholders in Colusa and Glenn County (Figure 2).

TABLE 1. DE-LSCE TEAM ANNUAL REPORT EXPERIENCE

Client/Services	2020	2021	2022
Tahama County (Los Molinos, Antelope, Red Bluff, and Bowman Subbasins)			■
Solano Subbasin			■
Corning Subbasin (development support)			■
Colusa Subbasin			■
Sutter Subbasin (GSA supported)			■
Eastern San Joaquin Subbasin (GSA supported)			■
Turlock Subbasin (GSA supported)			■
Madera Subbasin	■	■	■
Chowchilla Subbasin	■	■	■
Westside Subbasin	■	■	■
Delta Mendota Subbasin	■	■	■
Indian Wells Valley Subbasin (technical advisory committee review)	■	■	■
Merced Subbasin (review for Turner Island GSA)	■	■	
East Contra Costa Subbasin			■
East Bay Plains Subbasin			■

■ LSCE/DE ■ LSCE ■ DE

FIGURE 2. DE-LSCE TEAM EXPERIENCE IN THE COLUSA SUBBASIN



1 Colusa Subbasin

- Groundwater Sustainability Plan (2018-2022)
- First Colusa Subbasin GSP annual report (2022)
- SGM Implementation Round 2 Grant Assistance (2022)
- Fee Study

2 Glenn/Colusa Counties

- Property Transaction Studies
- (Region) Sacramento Valley Groundwater Quality Trend Monitoring Program (Sac Valley Water Quality Coalition)
- Stressed Basins Grant (2016-2018)

3 Member Agencies, Areas in Subbasin

- Orland Unit Water Users' Association Infrastructure Modernization Support
- Stony Creek Fan Conjunctive Use Study
- Orland-Artois Water District SCADA Support

4 Member Agencies, Areas in Subbasin

- Glenn-Colusa Irrigation District Turnout and Boundary Flow Measurements
- Glenn-Colusa Irrigation District Water Information System
- Provident Irrigation District Infrastructure Modernization Support
- Princeton-Codora-Glenn Irrigation District Turnout Measurement Support

5 Member Agencies, Areas in Subbasin

- TNC Multi-Benefit Recharge Study
- TNC Shallow Reflood Consumptive Use Study
- Davis Ranches Recharge Monitoring Support
- Sycamore Mutual Water Company Turnout Measurement Support
- Reclamation District No. 108 Turnout Measurement Support
- Reclamation District No. 108 Water Balance

RELATED PAST PROJECTS

Three past projects that have been successfully completed by the DE-LSCE Team are described below. These represent only a sampling of related projects completed by the DE-LSCE Team, both together and independently.

SGMA and GSP-Related Services

MADERA AND CHOWCHILLA SUBBASINS

REFERENCE: Madera Subbasin (Madera County), Ms. Stephanie Anagnoson, Director, Madera County Department of Water and Natural Resources; ***ADDRESS:*** 200 W 4th St, Madera, CA 93637; ***PHONE:*** 559.675.7703 x2265; ***EMAIL:*** stephanie.anagnoson@maderacounty.com

REFERENCE: Chowchilla Subbasin (Chowchilla WD), Mr. Doug Welch, General Resources Manager, Chowchilla Water District; ***ADDRESS:*** 327 S. Chowchilla Blvd. Chowchilla, CA 93610; ***PHONE:*** 559.665.3747; ***EMAIL:*** dwelch@cwdwater.com

Since 2017, DE and LSCE have been working together on behalf of GSAs in the Madera and Chowchilla Subbasins on tasks related to the development, implementation, monitoring, and annual reporting for two separate GSPs. Between 2020-2022, DE and LSCE successfully developed, submitted, and presented six annual reports.

Similar Services:

- Annual report development and submittal (2020, 2021, and 2022)
- Analysis of current groundwater conditions, water use, and subsidence
- Coordination with multiple GSAs and agencies
- Stakeholder presentations and engagement

GSP and Annual Report Development Services

TEHAMA COUNTY

REFERENCE: Mr. Justin Jenson, Deputy Director of Public Works – Water Resources; ***ADDRESS:*** 9380 San Benito Avenue, Gerber, CA 96035; ***PHONE:*** 530.385.1462; ***EMAIL:*** jenson@tcpw.ca.gov

LSCE, with support from DE, developed GSPs and the first-year annual reports for the Bowman, Antelope, Los Molinos, and Red Bluff Subbasins. Annual reports were successfully developed and submitted in 2022.

Similar Services:

- Annual report development and submittal (2022)
- Analysis of current groundwater conditions and water use
- Stakeholder communication

GSP and Annual Report Development Services

VINA, BUTTE, AND WYANDOTTE CREEK SUBBASINS

REFERENCE: Dr. Christina Buck, Assistant Director, Butte County Department of Water and Resource Conservation; ***ADDRESS:*** 308 Nelson Avenue Oroville, CA 95965; ***PHONE:*** 530.552.3593; ***EMAIL:*** cbuck@buttecounty.net

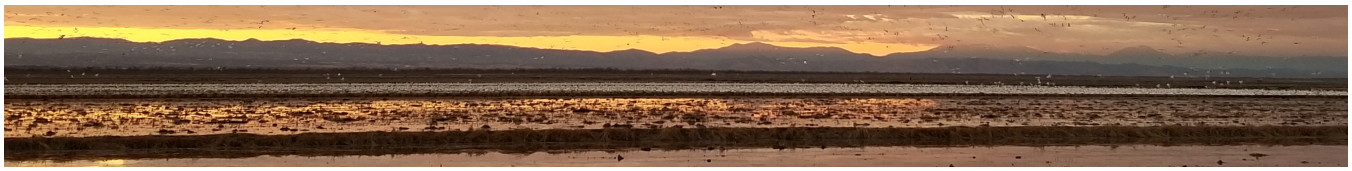
In 2022, LSCE and DE provided technical support to Butte County in the development of the first annual reports for the Vina, Butte, and Wyandotte Creek Subbasins. LSCE and DE are currently contracted with Butte County to complete annual reports for the same three subbasins through 2025.

Similar Services:

- Annual report development and submittal (2022)
- Analysis of current groundwater conditions and water use

KEY PERSONNEL

Brief bio-sketches for our proposed DE-LSCE Team Leader and other key Team members are presented in this section. Full length resumes are presented in **Appendix A**. All key team members have successfully collaborated on a variety of groundwater sustainability planning and related projects, ensuring seamless workflow on this Project.



Jeff Davids, PhD, PE (DE)

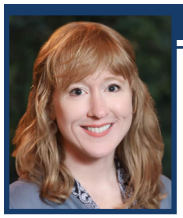
DE-LSCE TEAM LEADER AND PROJECT MANAGER

Jeff has over 15 years of experience focused on how sustainable management of water, energy, and food are supported by innovative sources of data, education, integrated systems thinking, modeling tools, social engagement, storytelling, and outreach. He has consulted for a variety of water managers and suppliers (local, state, and federal) in the major irrigated regions of California and in a variety of locations abroad. He has led and contributed to a variety of SGMA-related efforts throughout Northern California and the San Joaquin Valley.

John Davids, PE (DE)

TECHNICAL ADVISOR/REVIEWER

John has nearly 20 years of public- and private-sector professional experience in public policy, FERC relicensing, SGMA implementation, groundwater sustainability planning, water resources management and master planning, irrigation system modernization, permitting, design, and construction. He brings a unique perspective to consulting from his management experience at Modesto and Oakdale Irrigation Districts. John has led and overseen a variety of SGMA-related projects across disciplines in both the public and private sector.



Katie Klug, PhD (DE)

TECHNICAL LEAD

Katie has experience in GSP development, SGMA-related planning and reporting, water resources studies, and water management planning. Since 2018, she has contributed to the development of GSPs in more than 10 subbasins and has supported annual report development in many of those subbasins. From 2021-2022, Katie directly supported the successful completion and submittal of the Colusa Subbasin GSP. Katie also led the successful development and submittal of the first Colusa Subbasin GSP annual report and presented updates on current groundwater conditions to the GSA Boards and stakeholders. Her experience will be instrumental in ensuring continuity with previous GSP and annual report efforts.

Brandon Ertis, MS, PE (DE)

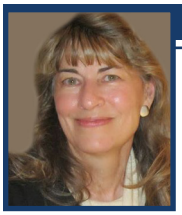
TECHNICAL TEAM

Brandon has provided a variety of water and environmental management services to clients in California for over 10 years including environmental data acquisition; water budgets; mapping and spatial analysis; development of water management tools for agricultural water suppliers (including tool design, implementation and staff training, and ongoing support); presenting technical information orally to stakeholders and the public, and preparation of technical reports and documents. He has contributed to a variety of SGMA-related efforts, including those in the Colusa Subbasin and the Butte Subbasin.

Eddy Teasdale, PG, CHG (LSCE)

PROJECT MANAGER

Eddy Teasdale has 25 years of experience in hydrogeologic, hydrologic, environmental, and scientific consultation for planning projects throughout California. He has managed a wide variety of projects, including water resources, groundwater investigations, modeling, and environmental permitting. Eddy is currently working on several groundwater and SGMA-related projects in Colusa, Glenn, Butte, Sutter, and Tehama Counties. Eddy served as the project manager for the development and submittal of annual reports for the Los Molinos, Antelope, Red Bluff, and Bowman Subbasins on behalf of Tehama County, and the Vina, Butte, and Wyandotte Creek Subbasins on behalf of Butte County.



Vicki Kretsinger Grabert (LSCE)

TECHNICAL ADVISOR/REVIEWER

Vicki has over 30 years of experience in regional groundwater resource management and quality assessments, including groundwater supply sufficiency and availability assessments, design of monitoring networks and programs, long-term groundwater quality monitoring and protection programs for twelve agricultural coalitions in the Central Valley, and groundwater technical assistance to the Central Valley Salinity Coalition since 2009. She has been the principal-in-charge of all SGMA-related technical work in the Napa Valley Subbasin and preparation of many SGMA-related technical documents, including four GSP annual reports. She is the Founding President of the Groundwater Resources Association of California and served as a director for 23 years.

Cab Esposito, GIT (LSCE)

TECHNICAL LEAD

Cab has over ten years of experience working on geologic and hydrologic projects. Cab has supported numerous GSPs throughout California since 2018, including technical planning efforts in the Shasta Valley. He is experienced with many different facets of GSP development, including conceptual model development, water budget calculations, public outreach, numerical model development, scenario analysis, and annual report development. In 2021-2022, Cab supported the Butte County Drought Impact Analysis for the Vina, Butte, and Wyandotte Creek Subbasins, and subsequent development of the 2022 annual reports in those subbasins.

Nick Watterson, PG (LSCE)

TECHNICAL TEAM

Nick has over 20 years of experience studying surface and groundwater hydrology. He has extensive experience with the acquisition, analysis, and display of complex geospatial water resources data. His experience includes quantification of groundwater supply and aquifer storage capacity; characterization of aquifer and well mechanics, well construction design, well rehabilitation program design and implementation; evaluation of groundwater-surface water interactions; and hydrologic modeling in varied hydrogeologic settings in California and Colorado. Nick has supported the development of numerous GSPs and annual reports across the Sacramento and San Joaquin Valleys.

Andrew Francis, GIT (LSCE)

TECHNICAL TEAM

Andrew has five years of professional experience in the development and implementation of GSPs throughout the Central Valley and Southern California. Andrew's GSP work has included characterizing geologic and groundwater conditions, developing sustainable management criteria, participating in technical advisory committees, and assisting with grant applications. Andrew has also presented on GSP development at public workshops on multiple occasions and has experience with stakeholder engagement. Andrew's primary area of expertise is in hydrogeologic conceptualization, and GIS analysis and mapping.

STATEMENT OF QUALIFICATIONS FOR SUBCONTRACTORS

Luhdorff & Scalmanini Consulting Engineers

LSCE is a full-service consulting and services company with proven expertise in groundwater. LSCE was founded to fill a recognized need for technical and management expertise in a broad range of issues associated with groundwater resources development and its efficient use.

LSCE has extensive history of SGMA-related experience, beginning with LSCE's service on technical advisory groups to the California Department of Water Resources (DWR) during the development of the GSP emergency regulations and Best Management Practices for SGMA implementation. Since then, LSCE has supported agencies across California to fulfill SGMA requirements through the development of GSPs and annual reports. LSCE's experience spans many critically overdrafted, high-, and medium-priority subbasins, including those highlighted in Figure 2. LSCE and DE connected through much of this work and continue to collaborate on GSP-related projects, including all three projects highlighted above.

In this Project, LSCE will provide hydrogeologic support to DE in collecting, evaluating, and representing groundwater elevations, change in groundwater storage, and groundwater extraction in the Colusa Subbasin. LSCE will take the lead in evaluating subsidence conditions and summarizing groundwater conditions relative to the Sustainable Management Criteria. LSCE will also support preparation of the draft annual report sections and presentations to GSA Boards and stakeholders on these topics.

SCHEDULING

The DE-LSCE Team understands that timely advancement and completion of work is essential to ensuring the annual report is developed efficiently; reviewed and verified by the GSAs, Technical Advisory Committees (TACs), and member agencies; and ultimately submitted to DWR in compliance with SGMA requirements before the April 1, 2023 deadline.

From our experience, we understand that sound management, communication, and adhering to schedule are essential to maintain trust amongst member agencies and stakeholders. We recognize the critical importance of engaging with GSAs and member agencies early in the reporting process to provide adequate time for acquiring and ensuring the accuracy of reported information about water supplies, water use, and GSP implementation activities. Likewise, we recognize the critical importance of building time into the schedule for review and feedback from the GSAs, TACs, and member agencies.

DE and LSCE take pride in maintaining pre-planned, client-approved project implementation schedules. Our basic scheduling approach on every project is to work with the client to identify key, achievable milestones and then to allocate and manage staff resources to accomplish those milestones. Milestone dates have to reflect not only the effort needed to accomplish the technical work, but also the time required for internal review, client review, and for client and public meetings.

In this Project, we plan to follow a similar approach guided by:

Regular project communications and updates between GSA staff, the DE-LSCE Team project managers, and other DE-LSCE Team members, through regularly scheduled calls and meetings.

Verification of project milestone dates with GSA staff, with consideration of scheduling needs for GSA staff review, TAC review, and Board review of deliverables in advance of presentation dates and the annual report submittal deadline.

Timely advancement of Project efforts, with consideration for those project milestone dates and building in time for internal review of all work products to ensure their quality and accuracy.

Our proposed schedule for Project completion is outlined in Section 2 of this proposal. During Project development, the DE-LSCE Team may recommend schedule changes to keep the project on schedule and within budget. Schedule changes will only be implemented with client approval, and only as required.

Each of the three relevant past projects described in this proposal included critical milestones for specified deliverables in advance of SGMA-required deadlines. The schedules for these projects were managed through a process similar to that proposed for this Project. In all cases, DE and LSCE have met the defined deadlines as set-forth by the client and SGMA. When you contact our project references, we encourage you to ask each reference how we maintained the schedule for their project.

Section 2.

Scope of Work and Schedule

Davids Engineering (DE) and Luhdorff and Scalmanini Consulting Engineers (LSCE) are pleased to submit this Scope of Work for the Development and Submittal of the Colusa Subbasin Water Year 2022 Groundwater Sustainability Plan Annual Report (Project).

As outlined in California Code of Regulations Title 23 (23 CCR) §356.2, annual reports must be submitted to the Department of Water Resources (DWR) by April 1 of each year following the adoption of the GSP. The water year 2022 annual report for the Colusa Subbasin GSP is required to be submitted by April 1, 2023. This scope of work describes the tasks that will be completed to prepare the water year 2022 annual report for the Colusa Subbasin GSP in compliance with all of the requirements of 23 CCR §356.2 (Table 2). DE and LSCE will work closely as an integrated team supporting each other for all tasks, as described below.

Table 2. Summary of GSP Annual Report Requirements and Associated Tasks

GSP Regulations Section (23 CCR)	Description	Task(s) to Fulfill Requirements
§ 356.2	Submit an annual report to DWR by April 1 that includes the following components for the preceding water year:	3
(a)	General information, including an executive summary and a location map depicting the basin covered by the report.	2.5
(b)	Description and graphical representation of the following conditions of the basin managed in the Plan:	2
(b)(1)	Groundwater elevation data from monitoring wells identified in the monitoring network (contour maps, hydrographs)	2.1
(b)(2)	Groundwater extraction (table, map)	2.2
(b)(3)	Surface water supply used or available for use, for groundwater recharge or in-lieu use	2.2
(b)(4)	Total water use	2.2
(b)(5)	Change in groundwater storage (maps, graph)	2.1
(c)	Description of progress toward implementing Plan, achieving interim milestones, and implementing projects or management actions since the last annual report.	2.4
§ 354.4	Include a copy of the monitoring data from the data management system in the annual report	1, 2.6

SCOPE OF WORK

Task 1: Data Collection, Compilation, and Analysis (DE-LSCE)

In this task, data will be collected, compiled, evaluated, and analyzed through the end of the preceding water year (water year 2022), extending the period of data gathered for the previous annual report (water years 2016-2021) and the historical water budget period in the GSP (water years 1990-2015).

Data collection will include all data sources required to evaluate and report on current groundwater conditions, water supply and water use, and GSP implementation activities in the Colusa Subbasin through water year 2022. Data collection, compilation, evaluation, and analysis will directly facilitate preparation of the annual report (Task 2) in compliance with the SGMA requirements. Anticipated data sources include, but are not necessarily limited to:

- Groundwater elevation data
- Subsidence monitoring data (e.g., InSAR)
- Water supply data (e.g., diversions, deliveries, drainage, spillage)
- Groundwater pumping data (e.g., meter records)
- Land use data (e.g., crop reports)
- Precipitation
- Updates on implementation of projects and management actions
- Actual benefit of projects and management actions to date (if applicable)
- Actual costs of projects and management actions to date (if applicable)

Data will be collected and compiled from publicly available sources, the Colusa Subbasin GSP monitoring network, and through data requests from agencies in the Colusa Subbasin. All applicable data will be quality controlled, organized, and stored in the initial Data Management System (DMS) developed during GSP development. A summary of the compiled data sources will also be provided to the GSAs to allow transparency and feedback, as needed, and for their future reference.

Analyses of the compiled data sources will be conducted in coordination with Task 2 to prepare all data summaries and tables required by 23 CCR §356.2 and all data summaries required to accurately report current conditions in the Colusa Subbasin. Planned results of these analyses are described in Task 2.

Task 2: Prepare Annual Report (DE-LSCE)

This task encompasses all necessary work to compile, prepare, and finalize the water year 2022 annual report. This task will result in the development of one draft annual report delivered to the GSAs for their feedback, one final annual report incorporating revisions based on feedback from the GSAs, and a set of tables summarizing the annual report information in the format required for submittal to DWR. This task assumes that the Colusa Subbasin groundwater model used in GSP development will not be updated.

SUBTASK 2.1 PREPARE A DESCRIPTION AND GRAPHICAL REPRESENTATION OF GROUNDWATER ELEVATIONS AND CHANGE IN GROUNDWATER STORAGE (DE, WITH SUPPORT FROM LSCE)

For this subtask, groundwater elevations and change in groundwater storage in the Colusa Subbasin will be quantified, described, and graphically represented as required in 23 CCR §356.2. This subtask will use groundwater elevation data gathered in Task 1 from Representative Monitoring Sites (RMS) included in the GSP monitoring network to generate the necessary seasonal representations of groundwater elevations and change in groundwater storage:

Groundwater Elevation Contour Maps: Contour maps will be prepared for the principal aquifer for seasonal high (spring) and low (fall) conditions in at least the preceding water year (2022). Data from RMS included in the GSP monitoring network will be used in conjunction with consideration of any supplemental groundwater elevation data available from other (non-GSP) monitoring programs.

Groundwater Elevation Hydrographs: Hydrographs through the preceding water year (2022) will be prepared for RMS wells with available data.

Change in Groundwater Storage Maps: Maps of the change in groundwater storage will be prepared for the principal aquifer to represent the change in seasonal high (spring) conditions in the preceding water year (2022).

Change in Groundwater Storage Graph: A graph depicting annual change in groundwater storage, cumulative change in groundwater storage, groundwater extraction (Subtask 2.2), and water year type, will be developed based on historical data to the greatest extent available, including from January 1, 2015, through the current reporting year.

This subtask will result in tabular and graphical summaries of groundwater elevations and change in groundwater storage, as required for submittal to DWR. This subtask will build on the processes used in the first annual report to ensure consistency with contour maps, hydrographs, and change in storage representations in previous water years.

SUBTASK 2.2. PREPARE A DESCRIPTION AND GRAPHICAL REPRESENTATION OF WATER SUPPLY AND WATER USE (DE, WITH SUPPORT FROM LSCE)

For this subtask, water supply and water use in the Colusa Subbasin will be quantified, described, and graphically represented as required in 23 CCR §356.2. This subtask will use data gathered in Task 1 to generate the necessary annual (water year) water budget components needed for these summaries.

Water budget components that will be developed for the preceding water year (2022) include:

Groundwater Extraction: Total groundwater extractions in the Colusa Subbasin will be quantified and summarized by water use sector. The volume of groundwater extraction that is measured or estimated will also be summarized according to their relative source and accuracy, distinguishing volumes directly measured and volumes estimated by land use and water demand. All data and methods used to characterize groundwater extractions will be based on the best available measurement methods and best available science, and will be described in the annual report.

Surface Water Supply Used or Available for Use, for Groundwater Recharge or In-lieu Use: The volume of surface water supply used or available for use will be summarized based on available surface water diversions and deliveries records and estimates for surface water purveyors and surface water users in the Colusa Subbasin. All surface water supply used or available for use in the Colusa Subbasin will be reported by water source type and based on annual quantitative volumetric data where available.

Total Water Use: The total water use in the Subbasin will be summarized, consistent with the previous annual report, as the total applied water from all sources and precipitation in the Subbasin, including all consumptive water use (evapotranspiration) and non-consumptive water use (other water uses, e.g. deep percolation and runoff). Total water use will be quantified based on the total groundwater extraction and the total applied surface water use quantified as part of this subtask. Water use data will be collected using the best available measurement methods.

The method and accuracy of measurements will be described.

This subtask will result in:

- Tabular and graphical summaries of groundwater extraction by water use sector and measurement/ calculation method (tabular summaries will be formatted as required for submittal to DWR)
- Map showing the general location and volumes of groundwater extraction
- Tabular and graphical summaries of surface water supply used or available for use by water source type (tabular summaries will be formatted as required for submittal to DWR)
- Tabular and graphical summaries of total water use by water use sector and water source type (tabular summaries will be formatted as required for submittal to DWR)

This subtask will build on the processes used in the first annual report to ensure consistency with water supply and water use representations in previous water years.

SUBTASK 2.3 PREPARE A DESCRIPTION AND GRAPHICAL REPRESENTATION OF SUBSIDENCE CONDITIONS (LSCE)

For this subtask, subsidence information gathered in Task 1, including InSAR data available from DWR, will be used to create graphical representations of subsidence conditions in the Colusa Subbasin. This subtask will generate maps of recent subsidence rates since the previous annual report (water year 2022), and cumulative subsidence extending the period evaluated in the previous annual report. This subtask will build on the processes used in the first annual report to ensure consistency with subsidence representations in previous water years.

SUBTASK 2.4 SUMMARIZE PROGRESS TOWARDS IMPLEMENTING THE GSP (DE-LSCE)

This subtask will summarize progress toward implementing the GSP and other GSA-related activities since the previous annual report and will summarize progress toward achieving the interim milestones identified in the GSP.

This subtask will result in:

- Tabular and descriptive summary of changes in implementation of projects and management actions, including any applicable costs and benefits since the previous annual report.
- Tabular summary of groundwater levels relative to interim milestones, using information from Subtask 2.1.

SUBTASK 2.5 PREPARE DRAFT ANNUAL REPORT (DE, WITH SUPPORT FROM LSCE)

In accordance with 23 CCR §356.2, this subtask will assemble information from the preceding subtasks to create a complete draft annual report document. This subtask will also prepare updates, as required, to general content required in the annual report (e.g., subbasin location map, executive summary). Following document assembly and internal quality control, the draft annual report will be distributed to the GSAs for review and feedback. That feedback will be used to revise and assemble the final annual report.

SUBTASK 2.6 PREPARE FINAL ANNUAL REPORT (DE)

In accordance with 23 CCR §356.2, this subtask will revise the draft annual report in response to feedback received from the GSAs, and will assemble all required GSP annual report components into the final annual report document. This subtask will result in the final annual report document, final copies of all tables required for submittal to DWR, and a final copy of the GSP monitoring data collected in Task 1.

This subtask should include all necessary tasks to compile, prepare, and finalize the annual report. This will include one draft annual report and revisions based on comments received by the GSAs.

Task 3: Annual Report Submittal (DE)

In this task, the final annual report document, final copies of all tables required for submittal to DWR, and the final copy of the GSP monitoring data (Subtask 2.6) will be uploaded to the DWR SGMA portal along with the elements guide. DE will review the SGMA portal uploads for accuracy and coordinate with GSA staff to submit the annual report in a timely manner.

Task 4: Meetings and Outreach (DE-LSCE)

The development of the annual report is expected to be a collaborative process between the DE-LSCE Team and the GSAs. This task will include regular project communications and updates between GSA staff, the DE-LSCE Team project managers, and other DE-LSCE Team members, through regularly scheduled calls and meetings, as described in our scheduling approach in Section 1. This task will also include updates to the GSA Boards and TACs, as directed by GSA staff.

Concurrent with development of the draft and final annual reports (Subtasks 2.5 and 2.6), the DE-LSCE Team will prepare two presentations:

- One presentation for the GSA Boards, summarizing current groundwater conditions and updates from the annual report pertaining to GSP implementation, especially from a policy perspective.
- One presentation for stakeholders, summarizing current groundwater conditions and updates from the annual report pertaining to GSP implementation, especially pertaining to local concerns for subsidence and groundwater levels.

It is expected that two presentations, one to each Board, will be given in early March, and that two public outreach presentations will be given in late March or early April. The DE-LSCE Team will proactively work with GSA staff to schedule meetings during the chosen timeframe.

It is assumed that all four meetings will be attended in-person by the presenting members of the DE-LSCE Team.

Task 5: Project Management (DE)

This task includes:

- Project task and budget tracking
- Coordinating budgets, invoicing amongst the DE-LSCE Team
- Preparing and submitting invoices to the GSAs
- Preparing project update memos, as requested by the GSAs

Task 6: Summary of Drought Impacts (Optional) (LSCE)

DWR, in coordination with the State Water Resources Control Board (SWRCB), has developed an online mapping tool to assess areas where domestic wells are susceptible to going dry. This tool uses well completions reports, water levels from spring 2021, and the maximum five-year change in spring groundwater levels from 2011 to 2021 to estimate the dry well susceptibility. In this optional task, the DE-LSCE Team will evaluate the most recently available assessment of domestic well susceptibility in the Colusa Subbasin and prepare maps and a short summary of conditions for the GSAs' information and use. The maps and summary may be incorporated into the annual report document, public outreach presentations, or other materials, at the discretion of the GSAs.

Task 7: Annual Report Preparation and Submittal for Water Years 2023-2025 (Optional) (DE-LSCE)

LSCE and DE are prepared to commit to developing and submitting the Colusa Subbasin GSP annual reports for water years 2023 through 2025. With the efficiencies and knowledge of the Colusa Subbasin from preparation of the water year 2022 annual report, we can reduce our annual cost as outlined in the cost section. This task does not include the preparation of the five-year GSP update.

SCHEDULE

An approximate timeline is presented in Table 3 for Tasks 1-5. This schedule provides time for GSA review of the draft documents and finalization and submittal of the GSP annual report before April 1, 2023, in accordance with SGMA requirements.

Table 3. Approximate Timeline for the Colusa Subbasin Water Year 2022 GSP Annual Report

Tasks	2022	2023			
	Dec	Jan	Feb	Mar	Apr
Task 1. Data Collection, Compilation, and Analysis.					
Task 2. Prepare Annual Report.					
Task 3. Annual Report Submittal.					
Task 4. Meetings and Outreach					
Task 5. Project Management					

Anticipated Milestones:

- December 2022: Awarded contract and finalize scope with GSAs.
- Week of February 27, 2023: Draft annual report delivered to GSAs for review
- Early- to Mid-March: GSA Board presentations, feedback received on draft annual report
- March 29, 2023: Annual report submittal (in advance of the April 1, 2023 deadline)
- Late March/Early April (TBD in Coordination with GSAs): Public outreach presentations

Section 3.

Cost

WATER YEAR 2022 ANNUAL REPORT (TASKS 1-5)

The cost estimate for developing, submitting, and presenting the water year 2022 annual report is summarized in Table 5 on the following page. This total includes the billing rates for each DE-LSCE Team member, their classification, and the number of proposed hours and expenses for each task and subtask. Annual hourly rate adjustments may be requested at the beginning of each calendar year without affecting the not-to-exceed contract amount.

Our cost estimate represents the level of effort to fulfill the scope of services outlined in the RFP to:

- Develop and submit the water year 2022 annual report for the Subbasin (Tasks 1-3, approximately $48,000).
- Prepare two presentations and present at four total meetings, two at GSA Board meetings and two at public outreach meetings (Task 4, approximately $15,000).
- Project management (Task 5, approximately $3,000).

SUMMARY OF DROUGHT IMPACTS (TASK 6, OPTIONAL)

If optional Task 6 is selected, the DE-LSCE Team will complete this task for approximately $4,000 (Table 5).

ANNUAL REPORT PREPARATION AND SUBMITTAL FOR WATER YEARS 2023-2025 (TASK 7, OPTIONAL)

If optional Task 7 is selected, the DE-LSCE Team is prepared to reduce the annual cost for developing, submitting, and presenting the Colusa Subbasin GSP annual report by 15% in 2023 (from the $65,620 cost in WY 2022) with an inflation adjustment of 3% for each of the following years (Table 4). As described under Task 7 of the scope of work, these costs do not include preparation of the five-year GSP update.

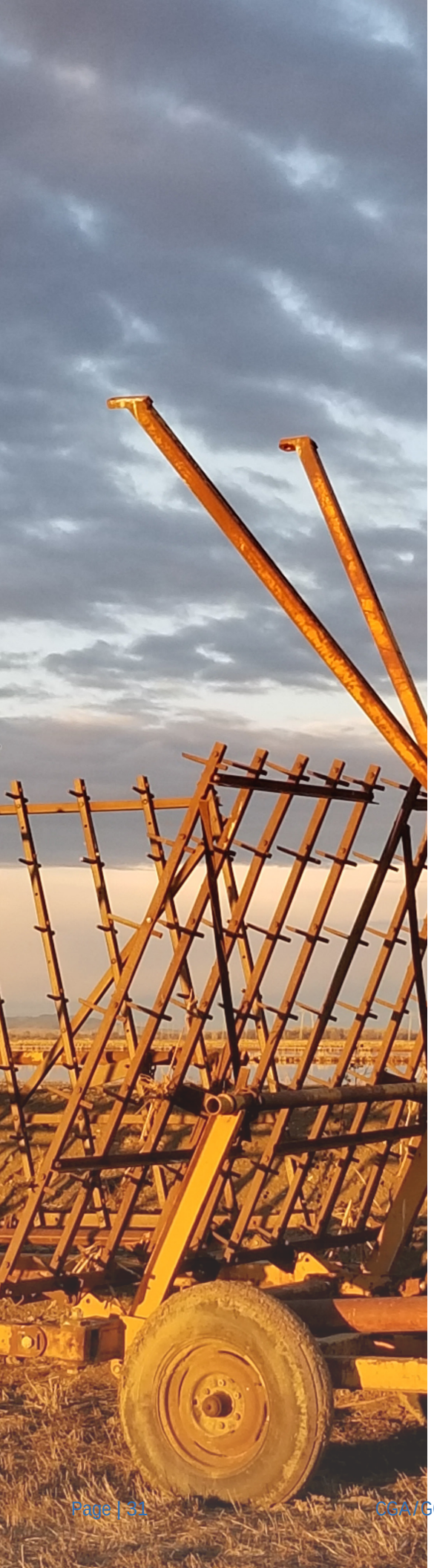
Table 4. Cost Estimate for Annual Report Preparation and Submittal for Water Years 2023-2025 (Task 7, Optional)

Water Year	2023	2024	2025
Proposed Cost ($) (For Work Corresponding to Tasks 1-5)	$55,800	$57,500	$59,200

.

Table 5. DE-LSCE Proposed Cost Estimate

Project Task/Subtask	Labor Costs: DE Principal Engineer (John Davids)	DE Supervising Engineer (Jeff Davids)	DE Associate Engineer II (Brandon Ertis)	DE Associate Engineer I (Katie Klug)	DE Staff Project Assistant	LSCE Senior Principal Hydrogeologist (Vicki Kretsinger Grabert)	LSCE Principal Hydrogeologist (Eddy Teasdale)	LSCE Principal Hydrogeologist (Nick Watterson)	LSCE Project Hydrogeologist (Cab Esposito)	LSCE Staff Hydrogeologist (Andrew Francis)	LSCE Clerical	Labor Costs Subtotal ($)	Direct Costs: Current IRS Mileage ($ / mile)	Direct Costs Subtotal ($)	Total Cost ($)
	Hourly Rates												Rates		
	$233	$213	$186	$175	$81	$235	$215	$196	$168	$165	$87		$0.56		
Task 1 - Data Collection, Compilation, and Analysis															
1.1 Data Collection, Compilation, and Analysis.	1	1	4	8	2		1	1	6	8	2	$5,665			**$5,665**
Task 1 Subtotals	1	1	4	8	2		1	1	6	8	2	$5,665			**$5,665**
Task 2 - Prepare Annual Report															
2.1 Prepare a Description and Graphical Representation of Groundwater Elevations and Change in Groundwater Storage	2	8	10	12			2		8	4		$8,564			**$8,564**
2.2 Prepare a Description and Graphical Representation of Water Supply and Water Use	1	4	10	16			4		12	8		$9,941			**$9,941**
2.3 Prepare a Description and Graphical Representation of Subsidence Conditions							8	4	8	8		$5,168			**$5,168**
2.4 Summarize Progress Towards Implementing the GSP		4	8	12			4		8	8		$7,964			**$7,964**
2.5 Prepare Draft Annual Report	2	2	4	12	4	2	2		4	4	4	$6,640			**$6,640**
2.6 Prepare Final Annual Report	1	1	2	4	4	1	1		2	2		$2,958			**$2,958**
Task 2 Subtotals	6	19	34	56	8	3	21	4	42	34	4	$41,235			**$41,235**
Task 3 - Annual Report Submittal															
3.1 Annual Report Submittal				4	2							$862			**$862**
Task 3 Subtotals				4	2							$862			**$862**
Task 4 - Meetings and Outreach															
4.1 Meetings and Outreach	2	20	2	12		2	20	2	12			$14,376	500	$280	**$14,656**
Task 4 Subtotals	2	20	2	12		2	20	2	12			$14,376	$280	$280	**$14,656**
Task 5 - Project Management															
5.1 Project Management	1	4		2	4	1	4				4	$3,202			**$3,202**
Task 5 Subtotals	1	4		2	4	1	4				4	$3,202			**$3,202**
Task 6 - Summary of Drought Impacts															
6.1 Summary of Drought Impacts							2	2	12	8		$4,158			**$4,158**
Task 6 Subtotals							2	2	12	8		$4,158			**$4,158**
Task 1-3 Totals	**7**	**20**	**38**	**68**	**12**	**3**	**22**	**5**	**48**	**42**	**6**	**47,762**			**47,762**
Task 1-5 Totals	**10**	**44**	**40**	**82**	**16**	**6**	**46**	**7**	**60**	**42**	**10**	**65,340**	**280**	**280**	**65,620**
Task 1-6 Totals	**10**	**44**	**40**	**82**	**16**	**6**	**48**	**9**	**72**	**50**	**10**	**69,498**	**280**	**280**	**69,778**



Davids Engineering Copy of Standard Contract

Agreement for Professional Engineering Services

To:	<Contact name>
	<Contact title>
	<Client name>
From:	<Name>
	Davids Engineering, Inc.
Date:	<Date>
Project name:	<Project name>
Project #:	<ClientNumber.ProjectNumber>

1 Scope of Services

The services to be performed by Davids Engineering, Inc. (CONSULTANT or DE) for <Client> (CLIENT) under this AGREEMENT are set forth in Attachment A, incorporated herein by reference.

2 Compensation

CLIENT will compensate CONSULTANT on the basis of labor plus direct expenses, not to exceed <project budget in writing and number>. CONSULTANT labor will be charged according to the hourly rates listed in Attachment B. Direct expenses will be billed without markup. Vehicle and equipment usage will be charged at the rates indicated in Attachment C.

3 Other Terms

Services covered by this AGREEMENT will be performed in accordance with the PROVISIONS and any attachments or schedules, incorporated herein by reference. This AGREEMENT is binding, represents the entire agreement of CLIENT and CONSULTANT concerning the subject matter hereof, and supersedes all prior agreements and understandings and may only be changed by written amendment executed by both parties.

4 Professional Engineering Services Agreement Signatures

Approved for CLIENT

Signed: _____

Name: _____

Title: _____

Date: _____

Accepted for Davids Engineering, Inc.

Signed: _____

Name: _____

Title: _____

Date: _____

5 Provisions

1. Authorization to Proceed
Execution of this AGREEMENT by CLIENT will be authorization for CONSULTANT to proceed with the work, unless otherwise provided for in this AGREEMENT.

2. Labor Rates
CONSULTANT's Labor Rates are those hourly rates charged for work performed on the PROJECT by CONSULTANT's employees of the indicated labor classifications. These rates are subject to annual calendar year adjustments and include all allowances for salary, overheads, and fee, but do not include allowances for Direct Expenses. On-call, emergency, and/or unplanned work requested by the Client to be completed outside of normal business hours (8am to 5pm), including holidays and weekends, will be billed at 1.5 times the hourly rates listed in Attachment B.

3. Direct Expenses
CONSULTANT's direct expenses are those necessary costs and charges incurred for the PROJECT including, but not limited to: (1) the direct costs of transportation, meals and lodging, mail, sub-contractors and outside services; special CLIENT-approved PROJECT-specific insurance, letters of credit, bonds, and equipment and supplies; (2) CONSULTANT's current standard rate charges for direct use of CONSULTANT's vehicles, computing systems, printing and reproduction services.

4. Cost Opinions
Any cost opinions or PROJECT economic evaluations provided by CONSULTANT will be on a basis of experience and judgment, but, since CONSULTANT has no control over market conditions or bidding procedures, CONSULTANT cannot warrant that bids, ultimate construction cost, or PROJECT economics will not vary from these opinions.

5. Standard of Care
The standard of care applicable to CONSULTANT services will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services at the time CONSULTANT's services are performed.

6. Insurance
During the term of this AGREEMENT, CONSULTANT shall maintain worker's compensation and employer's liability insurance as required by California law and comprehensive automobile insurance and general liability insurance that provide protection for claims which may arise out of CONSULTANT's performance under this AGREEMENT. The amount of such comprehensive automobile and general liability insurance coverages shall be not less than a single limit coverage applying to bodily and personal injury liability and property damage of $1,000,000 each occurrence and $2,000,000 annual aggregate. CONSULTANT will maintain professional errors and omissions insurance of $1,000,000 each occurrence and $1,000,000 annual aggregate during the term of this AGREEMENT.

7. Termination
This AGREEMENT may be terminated by CLIENT for convenience on 30 days' written notice. CONSULTANT may terminate this AGREEMENT only upon the breach of same by CLIENT. If either party defaults in the performance of

this AGREEMENT or materially breaches any of its PROVISIONS, the non-breaching party may terminate this agreement by giving written notification to the breaching party. Termination will take effect immediately on receipt of notice by the breaching party, or five business days after mailing of notice, whichever occurs first. For purposes of this PROVISION, material breach of the AGREEMENT includes, but is not limited to: CLIENT's failure to pay CONSULTANT any compensation due as provided for in PROVISION 8; or CLIENT's or CONSULTANT's material breach of any representation or agreement contained in this AGREEMENT. On termination, CONSULTANT will immediately cease performing any further services under this AGREEMENT, and will be paid for all work performed up to the termination date plus termination expenses such as, but not limited to, reassignment of personnel, subcontract termination costs, and related closeout costs. If no notice of termination is given, relationships and obligations created by this AGREEMENT will be terminated upon completion of all applicable requirements of this AGREEMENT.

8. Payment to CONSULTANT

Monthly invoices will be issued by CONSULTANT for all work performed under this AGREEMENT. Invoices are due and payable on receipt. Interest at a rate of 1 percent per month, or that permitted by law if lesser, will be charged on all past-due amounts starting 45 days after date of invoice. Payments will first be credited to interest and then to principal. In the event of a disputed or contested billing, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. CLIENT will exercise reasonableness in contesting any bill or portion thereof.

9. Indemnity

CONSULTANT shall indemnify (but not defend) CLIENT and its directors, officers, agents, and employees for and against liability or loss, including litigation costs and expenses and attorney fees, to the extent caused by the negligence or willful misconduct of CONSULTANT, or its agents, employees, or subcontractors, or of other persons for whom CONSULTANT is legally responsible, in connection with this AGREEMENT or the prosecution of work under it, except for liability or loss arising from CLIENT's willful misconduct or negligence. Indemnity shall extend to liability or loss occurring after completion of the work, as well as during the work's progress. CONSULTANT specifically agrees that this indemnification agreement includes indemnity for any claims, damages or liability for injuries (including death) incurred or sustained by CONSULTANT's own employees.

CLIENT shall indemnify CONSULTANT and its directors, officers, agents, and employees for and against liability or loss, including litigation costs and expenses and attorney fees, to the extent caused by the negligence or willful misconduct of CLIENT, or its agents, employees, or subcontractors, or of other persons for whom CLIENT is legally responsible, in connection with this AGREEMENT or the prosecution of work under it, except for liability or loss arising from CONSULTANT's willful misconduct or negligence. Indemnity shall extend to liability or loss occurring after completion of the work, as well as during the work's progress. CLIENT specifically agrees that this indemnification agreement includes indemnity for any claims, damages or liability for injuries (including death) incurred or sustained by CLIENT's own employees.

10. Relationship of the Parties

It is mutually understood and expressly agreed that the obligations under this AGREEMENT are of an independent contractor, and not as an employee of CLIENT. Accordingly, CONSULTANT will not be eligible for any of CLIENT's employee benefits, and CLIENT will have no duty to make any deduction or withholding from the consulting fees or reimbursements.

11. No Third Party Beneficiaries

This AGREEMENT gives no rights or benefits to anyone other than CLIENT and CONSULTANT and has no third party beneficiaries. CONSULTANT's services are defined solely by the AGREEMENT, and not by any other contract or AGREEMENT that may be associated with the Project.

12. Assignments

This is a bilateral personal services AGREEMENT. Neither party shall have the power to or will assign any of the duties or rights or any claim arising out of or related to this AGREEMENT, whether arising in tort, contract or otherwise, without the written consent of the other party. Any unauthorized assignment is void and unenforceable. These conditions and the entire AGREEMENT are binding on the heirs, successors, and assigns of the parties hereto.

13. Force Majeure

Neither CONSULTANT nor CLIENT shall be liable to the other for damages or delay in performing under this AGREEMENT, or for the direct or indirect costs resulting from such delay, arising out of labor strikes, riot, public disturbances, war, fire, accidents, extraordinary weather conditions or natural catastrophes, or any other cause beyond the control of either party.

14. AGREEMENT Not Exclusive

This AGREEMENT is understood and agreed not to be exclusive as both CLIENT and CONSULTANT reserve the right to enter into arrangements for consulting services with others.

15. Limitation of Liability/Waiver of Consequential Damages

To the maximum extent permitted by law, CONSULTANT's liability to CLIENT and all other consultants, contractors and subcontractors on the PROJECT arising from CONSULTANT's negligent acts, errors and omissions or breach of this AGREEMENT shall be limited, such that the total aggregate liability of CONSULTANT to all those named shall not exceed CONSULTANT's total compensation received from CLIENT for the services rendered under this AGREEMENT. CLIENT agrees that in no instance shall CONSULTANT be responsible, in whole or in part, for the negligent errors or omissions of any other party, including other consultants or contractors. This limitation shall apply regardless of the cause of action or legal theory asserted. CLIENT and CONSULTANT waive punitive and consequential damages for claims, disputes or other matters in question arising out of or relating to this AGREEMENT, including, without limitation, rental expenses, indirect loss or damage of any kind, losses of use, income, profit, financing, business and reputation, and additional financing costs.

16. Rights in Result of Services

The results or products of CONSULTANT's services under this AGREEMENT shall be, upon full payment of the amounts owed to CONSULTANT hereunder, the property of CLIENT, including all documents (including without limitation, all writings, drawings, blueprints, pictures, recordings, computer or machine readable data, and all copies or reproductions thereof) which describe or relate to the services performed or to be performed pursuant to this AGREEMENT or the results thereof, and shall be delivered to CLIENT upon request, except for one copy, which may be retained by CONSULTANT for CONSULTANT's files. CLIENT shall defend, indemnify and hold harmless CONSULTANT from and against any claims, liabilities or losses, including litigation costs and expenses and attorneys' fees, arising out of the use of the results or products of CONSULTANT's services other than on the PROJECT.

17. CONSULTANT'S Qualifications

CONSULTANT is experienced and qualified to perform the Services and is authorized to do business in the State of California. CONSULTANT has, and shall maintain at all times it is performing the Services, sufficient facilities, expertise, staff, assets and other resources to perform its duties under this AGREEMENT. CONSULTANT holds, and shall maintain at all times it is performing the Services, all licenses, permits or other certifications necessary to perform its duties under this AGREEMENT. CONSULTANT is in compliance with and shall continue to comply with all laws that apply to it, subject to the right of reasonable contest. CONSULTANT is a corporation, duly organized, validly existing and in good standing under the laws of the State of California, and has the full right, power and authority to enter into this AGREEMENT and to perform all of the obligations and liabilities of CONSULTANT required to be performed hereunder.

18. Hazardous Materials

CONSULTANT shall have no duty to identify, discover, handle, remove or remediate any hazardous materials or toxic substances ("Hazardous Materials") in any form. To the fullest extent permitted by law, CLIENT shall indemnify, defend and hold harmless CONSULTANT from and against any claim, defense costs, damages or liability which in any way arises out of the presence, alleged presence of, or alleged exposure to Hazardous Materials.

19. Sole Corporate Remedy

It is intended by the parties to this AGREEMENT that CONSULTANT's services in connection with the PROJECT shall not subject CONSULTANT's individual employees, officers, directors or principals to any personal legal exposure for the risks associated with this PROJECT. Therefore, and notwithstanding anything to the contrary contained herein, the CLIENT agrees that as the CLIENT's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against Davids Engineering, Inc, a California corporation, and not against any of CONSULTANT's employees, officers, directors, or principals.

20. Notices

Any notices required to be given under this AGREEMENT by either party to the other may be effected by personal delivery in writing or by mail, registered or certified, postage prepaid with return receipt requested. Mailed notices must be addressed to the parties at the addresses appearing on the first page of this AGREEMENT, but either party may change the address by giving written notice in accordance with this PROVISION. Notices delivered personally will be deemed communicated as of actual receipt; mailed notices will be deemed communicated as of the day of receipt or the fifth day after mailing, whichever occurs first.

21. Governing Law/Venue

This AGREEMENT will be governed by and construed in accordance with the laws of the State of California. Venue for any dispute shall be in the county where the PROJECT is located.

22. SEVERABILITY

If any provision of this AGREEMENT is held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of this AGREEMENT is invalid or unenforceable, but that by limiting such provision, it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

Attachment A

Services

1 Project Overview and Objective

<Why?>

2 Project Approach

<How?>

3 Project Proposal

3.1 Scope of Services

The scope of services to be performed by Davids Engineering is organized into XX tasks as described below:

1. Task 1

3.2 Deliverables

The following deliverable(s) will be provided to <Client>:

1. Deliverable 1

3.3 Assumptions

The following assumptions were made in developing this proposal. To the extent that these assumptions do not hold true, the effort and therefore the cost and schedule required to perform the services could be affected.

1. Assumption 1

3.4 Schedule

DE proposes to complete all work by <date>. Work will progress to meet milestones on a timeline as defined in the table below. Delays in the notice to proceed from <Client> will result in corresponding delays or shifts to the subsequent milestones. Schedule implications or deviations from the milestone dates that occur during the work will be made known to <Client> as soon as practicable.

Milestone	**Milestone Date**
Notice to Proceed	

3.5 Cost Proposal

The estimated budget required to perform the work described above is $#####. For budgeting purposes, a detailed subtask budget was prepared and is provided in Table #. While estimated costs are based on a detailed task-by-task buildup, actual project costs will not necessarily be tracked on a task basis nor will individual task budgets constrain charges for work performed up to the total estimated budget.

<insert budget table>

Attachment B

Labor Rate Schedule

Davids Engineering 2022 Rate Schedule

Labor Rates (Effective January 1, 2022)

Labor Classification	Hourly Rate [1]
Engineering Team	
Senior Principal Engineer	$246
Principal Engineer	$233
Supervising Engineer	$213
Senior Engineer	$195
Associate Engineer II	$186
Associate Engineer I	$175
Staff Engineer II	$164
Staff Engineer I	$151
Assistant Engineer II	$129
Assistant Engineer I	$111
Data Science Team	
Supervising Data Scientist	$192
Senior Data Scientist	$176
Associate Data Scientist II	$167
Associate Data Scientist I	$158
Staff Data Scientist II	$148
Staff Data Scientist I	$136
Assistant Scientist II	$116
Assistant Scientist I	$100

Labor Classification	Hourly Rate [1]
Technical Team	
Supervising Technician	$163
Senior Technician	$150
Associate Technician II	$142
Associate Technician I	$134
Staff Technician II	$126
Staff Technician I	$116
Assistant Technician II	$99
Assistant Technician I	$85
Intern Team	
Intern II	$72
Intern I	$50
Client Intern [3]	$28
Support Team	
Senior Project Assistant	$105
Associate Project Assistant	$94
Staff Project Assistant	$81
Other	
Expert Witness	Market Rate [2]
Strategic Advisor	Market Rate [2]

Notes:

[1] Labor and equipment rates are subject to revision at the beginning of each calendar year.

[2] Market rates subject to negotiation.

[3] DE team member working under direct client supervision.

Attachment C

Equipment Rate Schedule

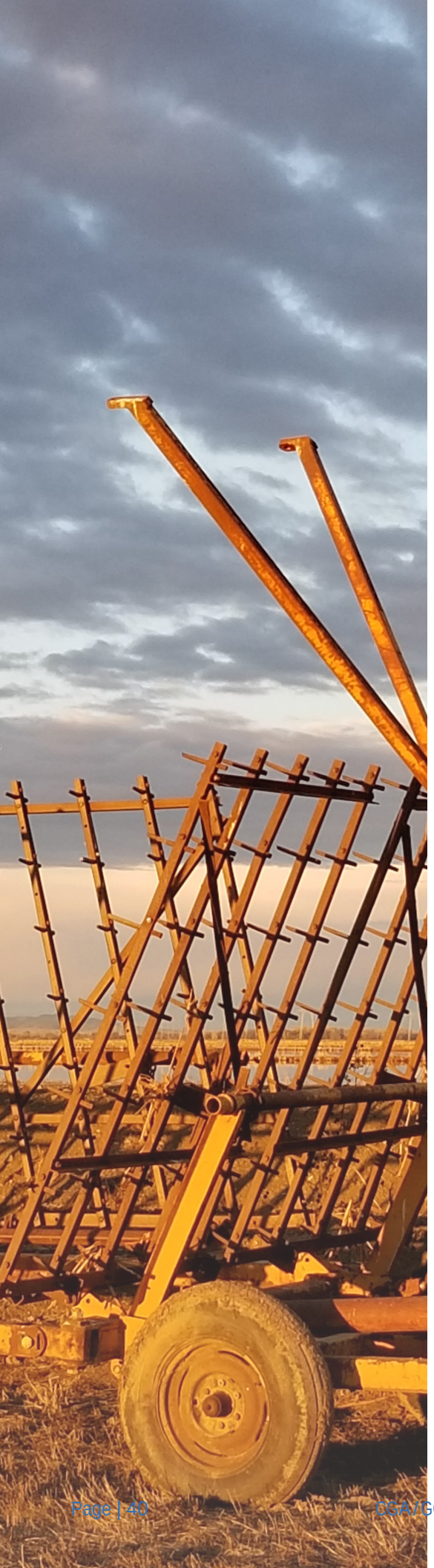
Davids Engineering 2022 Rate Schedule

Vehicle, Equipment, and Material Rates (Effective January 1, 2022)

Item	Rate [1]
Current IRS Mileage ($ / mile)	$0.585
Field Vehicle (4 x 4) ($ / mile)	$1.00
Meals ($ / person / day)	$40.00
Hotel ($ / person / day)	$120.00
SonTek RiverSurveyor Acoustic Doppler Current Profiler (ADCP) ($ / day)	$285.00
EMLID Real Time Kinematic (RTK) Survey ($ / day)	$175.00
Fuji Portaflow Transit Time ($ / day)	$75.00
SonTek FlowTracker Acoustic Doppler Velocimeter (ADV) ($ / day)	$100.00
Pressure Transducer ($ / month)	$75.00
Color Plotter ($ / square foot)	$7.00
Monitoring and control equipment and materials ($ / item)	Unit Costs

Notes:

[1] Labor and equipment rates are subject to revision at the beginning of each calendar year.



Appendix A

Team Resumes

- Jeff Davids, PHD, PE
- John Davids, PE
- Katie Klug, PHD, EIT
- Brandon Ertis, PE
- Eddy Teasdale, PG, CHG
- Vicki Kretsinger Grabert, PH-GW
- Cab Esposito, GIT
- Nick Watterson, PG, CHG
- Andrew Francis, GIT

Jeffrey C. Davids, Ph.D., P.E.

Supervising Engineer

Education

Ph.D., Civil Engineering, Water Management, Delft University of Technology, Delft, Netherlands

M.S., Hydrology and Hydrogeology, Graduation with Distinction, California State University, Chico, CA, USA

B.Sc., General Engineering, California Polytechnic State University, San Luis Obispo, CA, USA

Registration

Civil Engineer, CA
No. C75656

Years of Experience:

15 Years

Distinguishing Qualifications

- Innovative methods for measurement of hydrologic fluxes (e.g. remote sensing and citizen science)
- Stakeholder capacity building and communication of complex materials to diverse audiences
- Hydrologic data analytics, database development, quality control, and visualization

Summary

Dr. Davids's keenness for water resources and food production blossomed amongst the vast agricultural lands of California's Great Central Valley and pristine streams of the Sierra Nevada Mountains. His educational background, broad consulting experience, and dedication to the development of human resources from diverse backgrounds demonstrate his commitment to improved and sustainable management of the Earth's limited natural resources through appropriate applications of engineering and technology, education, and research. Dr. Davids is a licensed Professional Engineer (PE) in the State of California, and has a Ph.D. in Civil Engineering (Water Management) from Delft University of Technology, an M.Sc. from California State University Chico in Geosciences and Hydrogeology, and a B.Sc. in General Engineering from California State University San Luis Obispo. His interest and experience focus on how sustainable management of water, energy, and food are supported by innovative sources of data (e.g., low-cost sensors, remote sensing, citizen science), education, integrated systems thinking, modeling tools, social engagement, storytelling, and outreach. He has consulted for a variety of water managers and suppliers (local, state, and federal) in all the major irrigated regions of California, including the Imperial, San Joaquin, Sacramento, and Shasta Valleys. Dr. Davids also consults for the UN Food and Agriculture Organization (FAO) in Afghanistan, Myanmar, and China, along with various clients in Nepal, Ghana, Thailand, and the Netherlands. He has managed diverse international teams and large projects, including the design, installation, calibration, and maintenance of several large flow measurement and data acquisition networks in the US and abroad.

Relevant Experience

Madera County Groundwater Sustainability Agency Allocation Program Implementation Support. Madera County GSA, Madera County, CA. Dr. Davids developed accounting methodology, implementation logic, and data management protocols and procedures in coordination with County staff to administer Madera County's groundwater allocation resolutions. This work included the conceptual development and Python coding for monthly groundwater allocation reports including tabular summaries, mapping, and data visualizations (e.g., histograms). Dr. Davids worked with team of remote sensing experts (IrriWatch) to develop an online platform for growers to view and interact with crop evapotranspiration data and groundwater allocations.

Water Accounting Training and Implementation. Food and Agriculture Organization of the United Nations (UN-FAO), Afghanistan and Myanmar. Dr. Davids served as the development team member for open-source pixel based water balance software called Scalable Water balances from Earth Observations (SWEO). Additionally, Dr. Davids was the lead author for the development of comprehensive curricula for water accounting training including packages on: the water cycle; water balances; agricultural water use; environmental data acquisition; spatial and temporal domains; fluxes and changes in storage; geographical information systems (GIS); remote sensing (RS); hydrological modeling; green, blue, and grey water; crop physiology and transpiration processes; crop yields; consumptive vs. non-consumptive water uses; water productivity; climate change; Water Accounting Plus (WA+); interpretation of WA+ fact sheets; UN sustainable development goals; and development of appropriate water sector intervention packages. This included leading a diverse teaching team of international specialists from the Netherlands, Nepal, Thailand, UK, Afghanistan, the US, and the UAE. Water accounting training packages were implemented via an eight series training for 3o water resources specialists from three different Afghan water related ministries and a three series training for 25 water managers and researchers in Myanmar.

Buena Vista Water Storage District Historical Irrigation Water Demand Analysis. Downey Brand, Kern County, CA. Dr. Davids led the analysis of historical (i.e., 1885 through 2019) land use and associated consumptive water use within the current Buena Vista Water Storage District (BVWSD) service area. Dr. Davids developed Python code to perform a

pixel-based analysis of consumptive use. This included creation of a PRISM-based reference evapotranspiration (ETo) time series from pixel-based temperature and relative humidity data spanning from 1895 through 2019. Dr. Davids testified before the Administrative Hearings Office (AHO) of the California State Water Resources Control Board.

Teaching Spatial Hydrology, Irrigation, GIS and Remote Sensing, and Water Resources Engineering. California State University, Chico, Butte County, CA. Dr. Davids served as an assistant professor for three years, and is currently an adjunct professor, with the California State University, Chico. During his time at Chico State, Dr. Davids developed new curriculum and taught courses on Spatial Hydrology (CIVL 564), Water Resources Engineering (CIVL 461), GPS and GIS in Agriculture and Natural Resource Management (AGET 340), and Irrigation (AGET 360). During this time, he also continued research on the applications of citizen science in water resources management and agriculture. Dr. Davids secured $1 million in funding from the U.S. Bureau of Reclamation (USBR) for the Irrigation Training Facility at the California State University, Chico Farm, and two grants from the California Agricultural Research Initiative (ARI) related to monitoring of the soil-plant-water-atmosphere continuum and using videos to measure surface flows in stream and canals.

Consumptive Use Analysis on Shallowly Flooded Rice Fields. The Nature Conservancy, Yolo and Colusa Counties. Dr. Davids led the implementation of eddy covariance (EC) and remote sensing methods for quantifying incremental evapotranspiration from brief shallow flooding of fallowed rice fields. This included the comparison of evapotranspiration results from eddy covariance measurements, simplified surface renewal, and remote sensing to determine strengths and weaknesses of each approach. Dr. Davids developed recommendations to the California Department of Water Resources (DWR) for policies on transferable water for re-flooded rice fields.

Flow Measurement Improvement Projects. Reclamation District No. 108, Colusa County, CA. Since 2008, Dr. Davids has worked with Reclamation District No. 108 to improve their flow measurement, data management, and decision support systems. This work has included drain pump calibrations, testing of alternative turnout flow measurement options, training of water system operators, database development, and development of a wireless acoustic doppler flow measurement device. Dr. Davids led the pilot testing of alternative measurement methods that were potentially capable of achieving heightening regulatory standards, including: existing orifice gates, weirs set in precast boxes, and a recently introduced portable acoustic Doppler flow measurement device. The pilot program included (1) customization of the portable measurement device for District needs, (2) selection and inventory of a test reach, (3) calibration of upstream and downstream measurement devices, (4) development of an automated data transfer process and (5) development of a Water Information System for water accounting and billing.

Flow Measurement Plan Development and Implementation. South San Joaquin Irrigation District, San Joaquin County, CA. Dr. Davids supported the development and implementation of a Flow Measurement Plan (Plan) for the South San Joaquin Irrigation District (SSJID). The goals of the Plan are (1) to provide cost-effective service to customers; (2) generate improved operational records for planning and analysis, and; (3) comply with recently passed California legislation (SBx7-7). As part of this effort, Dr. Davids has designed a range of flow measurement methodologies and site improvements for SSJID involving standard critical depth structures (e.g. flumes and weirs) and acoustic Doppler flow measurement devices. Dr. Davids also participated in the field testing of acoustic Doppler devices.

Drain and Turnout Flow Measurement. Glenn-Colusa Irrigation District, Glenn and Colusa Counties, CA. Dr. Davids designed flow measurement methodology and improvement plans for 12 drain flow measurement sites around the low gradient borders of Glenn-Colusa Irrigation District. Key tasks included selecting appropriate measurement sites, performing detailed hydraulic calculations necessary for the design of the various flow measurement structures, creating conceptual designs, and developing specifications for measurement equipment and materials needed at the various measurement sites.

Glenn-Colusa Irrigation District, Princeton-Codora-Glenn Irrrigation District, Provident Irrigation District, Natomas Central Mutual Water Company, Richvale Irrigation District, Biggs-West Gridley Water District, and Western Canal Water District Turnout Flow Measurement Program Piloting and Implementation. Reclamation District No. 108, Glenn, Yolo, Colusa, Butte, and Sacramento Counties, CA. Dr. Davids led the development, piloting, implementation of an innovative turnout flow measurement solution for the irrigation which is now in use on over 150,000 acres. Dr. Davids has conducted various training sessions with district operators in the basics of open channel flow measurement, critical flow devices, and hydroacoustics. For each district, Dr. Davids has inventoried district distribution systems, established standardized naming conventions, pilot tested alternative measurement devices, selected preferred measurement alternatives, and developed custom database applications for quality controlling and managing turnout flow data.

John B. Davids, P.E.
Principal Engineer

Education

B.S., BioResource and Agricultural Engineering, California Polytechnic University, San Luis Obispo

Registration

Civil Engineer, CA (No. C73036)

Years of Experience:

20 Years

Distinguishing Qualifications

- Building and fostering relationships with stakeholders and outside agencies and representatives to deliver best possible professional solutions.
- Proficient at coordinating multi-disciplinary projects, communicating changes and progress and completing projects on time and within budget.
- Aptitude to navigate dynamic regulatory and legislative climate.

Summary

Mr. Davids joined DE in June of 2021 and currently serves as a Principal Engineer, working across all three of DE's solutions – Water, Infrastructure, and Technology. John has 20 years of progressive experience in public policy, FERC relicensing, water resources master planning, irrigation system modernization, permitting, design, construction, and groundwater management. Mr. Davids is an active member of the United States Committee on Irrigation and Drainage, past member of the Association of California Water Agencies Groundwater Committee and Agriculture Committee, past Chair of the Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency, and past member of the Oakdale Rotary Club where he served as the Sergeant at Arms.

Prior to joining DE, Mr. Davids worked for Modesto Irrigation District (MID) as one of their Assistant General Managers overseeing MID's Water Operations (ag water and domestic water), Federal Energy Regulatory Commission (FERC) relicensing of Don Pedro Reservoir, Voluntary Agreement negotiations with the State of California related to Phase I of the Bay-Delta Water Quality Control Plan and Chair of the Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency. From 2004 to 2013, Mr. Davids managed Oakdale Irrigation District's (OID) Engineering Department coordinating all department functions including, subdivision/parcel map review, California Environmental Quality Act (CEQA) compliance, master planning and capital project design. Prior to OID, from 2002 to 2004, Mr. Davids worked for a large international consulting firm, working on a wide variety of water resources projects in the Western United States including projects for irrigation districts, various municipalities and the Los Angeles Department of Water and Power.

Relevant Experience

Chowchilla Subbasin Groundwater Sustainability Plan Revisions. Chowchilla Water District, Chowchilla, CA. Mr Davids served as Team Leader of a multi-firm and multi-disciplinary team of professionals assembled to revise the Chowchilla Subbasin GSP submitted in January of 2020 consistent with the three deficiencies identified by the Department of Water Resources. The three deficiencies identified were related to groundwater levels, subsidence, and interconnected surface water. As part of the revised GSP, Mr. Davids led development of a Domestic Well Mitigation Memorandum of Understanding among the four GSAs, which led to establishment of a Domestic Well Mitigation Program for the Chowchilla Subbasin.

Madera County Recharge Study. County of Madera, Madera, CA. Mr. Davids is serving as Team Leader of a multi-firm and multi-disciplinary team of professional and has successfully expedited the preliminary development of 10 recharge projects – 5 in the Chowchilla Subbasin and 5 in the Madera Subbasin. In general, the projects include a mix of dedicated recharge basins and Flood-MAR and range in total recharge capacity at full build-out from 8,000 acre-feet (AF)/year to nearly 30,000 AF/year. Collectively, the total recharge potential in wet years is approximately 80,000 AF in the Chowchilla Subbasin and nearly 116,000 AF in the Madera Subbasin.

Madera/Chowchilla Recharge Projects, County of Madera, Madera, CA. Mr. Davids is serving as Team Leader of a multi-firm and multi-disciplinary team of professionals designing, permitting, and constructing recharge projects in both the Madera and Chowchilla Subbasin. To date, both projects are approaching 60% design and construction is expected to commence during the first quarter of 2023. Collectively, the projects will be designed to have a recharge capacity of approximately 19,000 AF per year when flood flows are available. Completion of the projects is being funded by a grant from the Department of Water Resources (DWR) and a local cost share. DE prepared the successful grant applications for these two projects.

Non-District East Groundwater Recharge Project Development and Ranking, L.F. Brichetto, Oakdale, CA. In an effort to prepare for upcoming grant funding opportunities and on behalf of approximately 15,000 acres of privately developed agricultural in the white area of the Modesto Subbasin, Mr. Davids is leading the DE Team tasked with

completing a Groundwater Recharge Project Development and Ranking Project. Tasks for this project include acquisition of GIS data, completion and distribution of a recharge survey interest form, completion of GIS base mapping, completion of a recharge suitability analysis, water supply negotiations, and conceptual project development and ranking. A ranking of the projects developed will serve as a "menu" of recharge options as funding becomes available. It is contemplated that further design, environmental permitting, construction management, and monitoring and assessment will be performed as part of subsequent work activities following successful grant award.

Measurement Consulting Services, County of Madera, Madera, CA. Mr. Davids currently serves in an on-call capacity at the direction of the General Manager on a variety of ongoing strategic projects. Mr. Davids provides professional services related to Phase I of the Bay-Delta Water Quality Control Plan, SGMA, and FERC relicensing of the Don Pedro Project.

Assistant General Manager, Water Operations, Modesto Irrigation District, Modesto, CA. As Assistant General Manager, it was Mr. Davids' responsibility to plan, organize, direct and review the activities and operations of the Water Operations Division including civil engineering, water use, planning and conservation, irrigation services, construction management, domestic water operations, and to coordinate assigned activities with other divisions and outside agencies and provide highly responsible and complex administration support to the General Manager and the Board of Directors. Mr Davids was responsible for transparent development and implementation of the Water Operations Division annual budget – approximately $40M (2020).

District Engineer, Oakdale Irrigation District, Oakdale, CA. As District Engineer, it was Mr. Davids' responsibility to manage and direct all Engineering Department activities. During Mr. Davids decade at Oakdale Irrigation District, Mr. Davids lead the implementation of the Comprehensive Water Resources Plan and the subsequent design and construction of over $50M in capital improvements.

Representative Projects

- Don Pedro and La Grange Federal Energy Regulatory Commission Relicensing and Licensing, Modesto Irrigation District
- Main Canal Regulating Reservoir, Modesto Irrigation District
- Water Operations Cost of Service Model, Modesto Irrigation District
- Development and implementation of volumetric billing, Modesto Irrigation District
- Development and implementation of special drought programs and drought surcharge, Modesto Irrigation District
- Creation, development and implementation of Water Resources Planning Department, Modesto Irrigation District
- Annual revisions to Rules and Regulations Governing the Distribution of Irrigation Water with the Modesto Irrigation District, Modesto Irrigation District
- 2015/2020 Agricultural Water Management Plans, Modesto Irrigation District
- Successful introduction and use of new aquatic herbicides in irrigation conveyance infrastructure, Modesto Irrigation District
- Modesto Regional Water Treatment Plant Phase II construction activities, contract closeout and commissioning, Modesto Irrigation District
- Oral testimony to State Water Resources Control Board at December 20, 2016 public hearing regarding revisions to the Water Quality Control for the Bay-Delta, Modesto Irrigation District
- Successful coordination and operation of 2017 flood management operations, Modesto Irrigation District
- Development and implementation of 2017, 2018 and 2019 Groundwater Replenishment Plan, Modesto Irrigation District (1st place award in the 2020 CMUA Resource Efficiency & Community Service Awards)
- Creation of Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency, Modesto Irrigation District
- Successful good faith negotiation of Tuolumne River Voluntary Agreement, Modesto Irrigation District
- Settlement Agreement with the U.S. Bureau of Land Management regarding Don Pedro Relicensing, Modesto Irrigation District
- Revised 10(j) conditions with U.S. Fish and Wildlife Service regarding Don Pedro Relicensing, Modesto Irrigation District
- Memorandum of Understanding with U.S. Fish and Wildlife Service regarding early implementation of habitat improvement projects on the Lower Tuolumne River, Modesto Irrigation District
- Water Resources Plan, Oakdale Irrigation District
- North Side Regulating Reservoir, Oakdale Irrigation District (2009 ASCE Project of Merit)

- Honolulu Bar Habitat Restoration Project on the Stanislaus River, Oakdale Irrigation District
- Cashman Dam Rehabilitation Project, Oakdale Irrigation District
- Little Johns Creek Diversion, Oakdale Irrigation District
- Fairbanks Crossing at South San Joaquin Irrigation District, Oakdale Irrigation District
- 2012 Standard Details, Oakdale Irrigation District
- System-wide GIS Mapping, Oakdale Irrigation District
- Numerous automation projects, Oakdale Irrigation District
- Numerous flow measurement projects, Oakdale Irrigation District
- Numerous pipeline replacement projects, Oakdale Irrigation District
- Numerous canal rehabilitation projects, Oakdale Irrigation District
- Total Channel Control Pilot Program, Oakdale Irrigation District
- 2012 Agricultural Water Management Plan (SBx7-7 Measurement and Volumetric Billing Sections), Oakdale Irrigation District
- Glenn Colusa, Canal Enlargement Study, CH2MHill (now Jacobs)
- Orland Unit, Modernization Analysis, CH2MHill (now Jacobs)
- L.A. Department of Water and Power, Owens Lake Mitigation Project, CH2MHill (now Jacobs)

Katherine E. Klug, Ph.D.

Associate Engineer I

Education

Ph.D., Agricultural & Biosystems Engineering, University of Arizona

B.S., Biosystems Engineering, University of Arizona

Years of Experience:

4 Years

Distinguishing Qualifications

- Wide-ranging experience supporting groundwater sustainability and recharge planning efforts, from field-level to subbasin-level.
- Authored various planning documents, grant applications, and technical reports for diverse audiences and clients.
- Instrumental in Groundwater Sustainability Plan (GSP) development and/or implementation for twelve (12) subbasins, including the Colusa Subbasin.

Summary

Dr. Klug is an associate engineer with a strong background in supporting collaborative water and groundwater management planning efforts, including those with a foundational modeling component. Since joining Davids Engineering in early 2018, she has been instrumental in completing all aspects of various Water Management Plans (WMPs), Agricultural Water Management Plans (AWMPs) and Groundwater Sustainability Plans (GSPs) for water districts and public agencies in California's Central Valley. Dr. Klug has also led or supported documentation efforts and modeling analyses for other major plans and studies in California and the Southwestern United States.

Relevant Experience

SGMA GSP Development, Multiple Locations, CA. Since 2018, Dr. Klug has contributed in varying capacities to Groundwater Sustainability Plan (GSP) development – including development, analysis, and documentation of recharge projects – in multiple subbasins across the Sacramento and San Joaquin Valleys (including Antelope, Bowman, Butte, Chowchilla, Colusa, Corning, Los Molinos, Madera, Red Bluff, Solano, Sutter, and Turlock subbasins in the Sacramento and San Joaquin Valleys. These subbasins are considered high- or medium-priority according to the SGMA 2019 Basin Prioritization, and were required to complete, adopt, and submit a GSP by January 2022.

Dr. Klug's contributions to GSP development have generally included one or more of the following: developing, documenting, and evaluating projects and management actions to support sustainable water management, including numerous groundwater recharge projects; preparing model inputs to characterize historical, current, and future water demand; developing and analyzing district-level, subregion-level, and subbasin-level water budgets and model results summaries; preparing GSP documentation; and/or presenting various sections of the GSPs and related findings to GSA representatives and stakeholders. Dr. Klug has communicated directly with GSA representatives and stakeholders, presenting and discussing presentation materials to make certain that subbasin conditions and input from stakeholders are accurately represented.

Since January 2022, Dr. Klug is also supporting development of annual reports, updates to water demand-related model inputs and/or water budget components, implementation and tracking of projects and management actions, and other efforts to support GSP implementation in the majority of these subbasins.

SGMA Implementation, Madera County, Madera, CA. Since 2018, Dr. Klug has supported SGMA Groundwater Sustainability Plan (GSP) development and implementation in the Chowchilla and Madera Subbasins in Madera County. Both subbasins are considered critically overdrafted, and were required to complete, adopt, and submit GSPs by January 2020. Her key contributions to these efforts include: evaluating and documenting projects and management actions, including recharge projects; developing historical and current water budgets; and preparing select sections of the draft and final GSP documentation. Since 2020, Dr. Klug has also supported annual reporting, ongoing water budget development, implementation and tracking of projects and management actions, and other efforts to support GSP implementation among various GSAs in the Chowchilla and Madera Subbasins. In 2019-2021, Dr. Klug supported the development of four successful grant applications to fund prioritization, development, and construction of groundwater recharge projects.

Guidance for Multi-Benefit Recharge Project Analyses and Reporting, The Nature Conservancy. In 2021, Dr. Klug supported The Nature Conservancy (TNC) in creating a guidance document for Groundwater Sustainability Agencies (GSAs) to facilitate consistent and accurate reporting of multi-benefit recharge projects in their Groundwater Sustainability Plans (GSPs). Through a collaborative process, Dr. Klug synthesized findings from TNC's Colusa Demonstration Multi-Benefit Recharge Project to create a process for other agencies to implement and quantify the recharge benefits of their own multi-benefit recharge projects. Guidance provided by this project was used to inform development and documentation of multi-benefit recharge projects in multiple subbasins in the Sacramento and San Joaquin Valleys.

Agricultural Water Management Planning, Turlock Irrigation District and South San Joaquin Irrigation District, CA. In 2020-2021, Dr. Klug prepared Agricultural Water Management Plans (AWMPs) for submittal to the California Department of Water Resources in separate projects for the Turlock Irrigation District (TID) and the South San Joaquin Irrigation District (SSJID). Each effort included updating the district's system-wide water budget; communicating with district staff to identify recent projects and efforts to implement Efficient Water Management Practices (EWMPs); and preparing reports for District staff and for submittal to DWR. The water budget updates involved quantifying agricultural water demand and water use using a daily root zone water balance model on the basis of cropping, soil characteristics, weather (evaporative demand and precipitation), and crop coefficients developed from remotely-sensed surface energy balance results. Besides supporting the AWMP, these results also provide a technical basis for district policies and help to identify water conservation opportunities.

Water Management Planning and Water Budget Development, Stockton East Water District, Stockton, CA. In 2019, Dr. Klug served as the primary project engineer and point of contact for development of the Stockton East Water District (SEWD) 2019 Water Management Plan (WMP). In this project, Dr. Klug managed communication between Davids Engineering and SEWD to identify all data, relevant project information, and changes to the District's conveyance system, infrastructure, and operating practices between 2010 and 2019. She then integrated this information to narrate the District's implementation of Agricultural and Urban Best Management Practices (BMPs) over the past decade, and to quantify the SEWD system water budget. The water budget updates involved quantifying agricultural water demand and water use using a daily root zone water balance model on the basis of cropping, soil characteristics, weather (evaporative demand and precipitation), and crop coefficients developed from remotely-sensed surface energy balance results. Dr. Klug led a workshop at SEWD to discuss these efforts, and prepared a final WMP document to SEWD for submittal to the U.S. Bureau of Reclamation.

Agricultural Water Consumptive Use Determination, New Mexico Interstate Stream Commission. In 2018-2020, Dr. Klug supported the analyses to determine agricultural water consumptive use for the lands irrigated along the Rio Grande in New Mexico and Texas by the Rio Grande Project. Her contributions to these efforts included documentation and reporting of all technical analyses, including calculation of reference ET, development of crop coefficients from remotely sensed energy balance analyses, and the application of the ET Demands root zone model to parse crop ET into ET of applied water and ET of precipitation. The reports on these technical analyses were in used in the matter of: *State of Texas v. State of New Mexico and State of Colorado* No. 141, Original Before the United States Supreme Court.

Irrigation Facilities Master Plan, Turlock Irrigation District, Turlock, CA. In 2018-2019, Dr. Klug supported development of the Turlock Irrigation District (TID) Irrigation Facilities Master Plan (IFMP). The IFMP was developed in coordination with TID to identify and evaluate modernization projects for the District's water distribution infrastructure. Projects proposed in the IFMP were designed to modernize TID's infrastructure with the intent of allowing growers to adopt more efficient and productive on-farm irrigation systems, leading to increased water conservation over time as well as increased farm profitability. In her many contributions to this effort, Dr. Klug prepared and/or documented: analyses of existing service levels in the District; descriptions and evaluations of 15 potential modernization projects; systematic analyses and comparisons of project benefits; evaluation of synergistic multi-project packages; and project implantation strategies. Dr. Klug's efforts and participation in meetings with District staff contributed to the creation of more than 50 work products, including technical memoranda, spreadsheets, databases, design drawings, presentations, workshop notes, and other items.

Water Management Planning and Water Budget Development, Solano Irrigation District, Vacaville, CA. In 2018-2019, Dr. Klug prepared the Solano Irrigation District (SID) Water Management Plan (WMP) for submittal the U.S. Bureau of Reclamation. Concurrent with these efforts, Dr. Klug also prepared supporting materials to complete the 2020 Agricultural Water Management Plan (AWMP) for submittal to the California Department of Water Resources. These efforts included drafting and/or editing all document text; communicating with SID staff to identify the district's efforts to implement Best Management Practices (BMPs) and Efficient Water Management Practices (EWMPs); and updating the SID system-wide water budget. The water budget updates involved quantifying agricultural water demand and water use using a daily root zone water balance model on the basis of cropping, soil characteristics, weather (evaporative demand and precipitation), and crop coefficients developed from remotely-sensed surface energy balance results. Besides supporting the AWMP and WMP, these results also provide a technical basis for SID to consider water allocation and annexation policies and to identify water conservation opportunities.

Brandon Ertis, M.S., P.E.

Associate Engineer II

Education

M.S., Environmental Science, California State University, Chico, CA.

B.S., Civil Engineering, University of California, Davis, CA.

Registration

Civil Engineer, California (No. C84037)

Years of Experience:

10 Years

Distinguishing Qualifications

- Authored and assisted with various major plans and technical reports, including multiple related to water supply and groundwater sustainability
- Assembly and analysis of historical land and water use data for water budget development
- Geographic Information Systems – mapping and spatial analyses

Experience Summary

Mr. Ertis has provided a variety of water and environmental management services to clients in California for over 10 years. These services include environmental data acquisition; designing and completing detailed water budgets; utilizing GIS techniques for a variety of mapping and spatial analysis procedures and processes; development of water management tools for agricultural water suppliers (including tool design, implementation and staff training, and ongoing support); presenting technical information orally to stakeholders and the public, and preparation of technical reports and documents. He has been involved in dozens of successful projects for a variety of clients

Relevant Experience

El Dorado County Agricultural Development Feasibility Assessment, El Dorado County Water Agency, El Dorado County, CA. The El Dorado County Water Agency (EDCWA) engaged Davids Engineering and ERA Economics to complete an agricultural development feasibility assessment by developing baseline data regarding historical cropping trends, spatial distribution of crops, and irrigation practices and evaluating historical, current, and projected future cropping and water demands within El Dorado County. This effort informs an evaluation of the feasibility of developing additional water supplies to expand irrigated agriculture in the County. Mr. Ertis assisted in this project through assembly and evaluation of datasets (including assembly and review of inputs for and results of the water demand model), developing maps and completing spatial analyses in GIS, drafting sections of the report, and presenting project results to an Agricultural Advisory Group comprised of local stakeholders formed to provide feedback and inform the feasibility assessment process.

Feather River Regional Agricultural Water Management Plan, Northern California Water Association, Sacramento, CA. The Northern California Water Association (NCWA) engaged Davids Engineering to develop the Feather River Regional Agricultural Water Management Plan (FRRAWMP). A detailed plan for the 470,000 acre region was developed, including extensive consultation with nine water suppliers, several refuge and wildlife area managers, and representatives of Butte County and the California Department of Water Resources. The FRRAWMP includes a detailed inventory of surface water and groundwater supplies and uses and, through multiple water budget analyses spanning scales of individual suppliers to the region as a whole, characterizes the interaction between surface water and underlying groundwater systems in the region. Mr. Ertis was involved for the duration of the project in a supporting role, developing maps and completing spatial analyses in GIS, assembling supplier infrastructure inventories, identifying potential system improvement projects, preparing conceptual cost estimates for improvement projects, assisting in the preparation and calculation of water balances, drafting sections of the report, analyzing datasets, and meeting with agricultural water suppliers in the region. Mr. Ertis has also led state-mandated periodic updates to AWMPs for individual water suppliers included in the FRRAWMP region.

Sustainable Groundwater Management Act (SGMA) Groundwater Sustainability Plan (GSP) Development, Multiple Locations, CA. Mr. Ertis has both assisted and led multiple components of Groundwater Sustainability Plan (GSP) development in multiple groundwater basins in California including the Madera, Chowchilla, Solano, Colusa, Corning, and Butte Subbasins. His contributions include preparing draft and final GSP documentation, preparing draft and final Annual Report documentation, reviewing and editing all GSP documentation to ensure SGMA compliance; reviewing and responding to public comments, developing water budgets, evaluating sustainable management criteria, evaluating projects and management actions, development of maps and figures, preparing and presenting information to stakeholders and the public, and participation in coordination and meetings.

Groundwater Risk Assessment, Tehama County, CA. Mr. Ertis assisted in a high level risk assessment of SGMA undesirable results, assessing localized groundwater declines, subsidence risks, overdraft, and impacts due to climate change. He prepared maps and figures for public presentation showing historical and recent trends in groundwater conditions using publicly available information provided by state and local agencies.

Water Budget Development and Water Management Planning Oakdale Irrigation District, Oakdale, CA. Mr. Ertis prepared the 2020 Agricultural Water Management Plan (AWMP) update for submittal to the California Department of Water Resources. This preparation included drafting and/or editing all document text; communicating with OID staff to identify District efforts to implement Efficient Water Management Practices (EWMPs); and updating the OID system-wide water budget. The water budget updates involved quantifying agricultural water demand and water use using a daily root zone water balance model on the basis of cropping, soil characteristics, weather (evaporative demand and precipitation), and crop coefficients developed from remotely-sensed surface energy balance results. In addition to meeting state-mandated requirements, the AWMP is used by OID to review the ongoing implementation of their Water Resources Plan.

Colusa and Yolo Counties In-Lieu Groundwater Recharge Investigation, Reclamation District No. 108, Grimes, CA. Mr. Ertis assisted with an analysis of the potential to use RD108 surplus water, when available, to supplement available water supplies in Colusa County Water District and in Dunnigan Water District (Yolo County). An operations model spanning a 65-year planning horizon quantifying water demands, water supplies, and associated costs was developed that simulated the purchase of water by growers in each district. Mr. Ertis assisted in the project effort with data analysis and development of maps and figures using GIS and other software. Based on the model results, the parties have moved forward with a multi-year water transfer pilot program to test the water transfer concept and terms.

Implementation of Delivery Measurement, Data Management and Accounting, and Volumetric Billing, Reclamation District No. 108 (RD108), Richvale Irrigation District (RID), Biggs-West Gridley Water District (BWGWD), Western Canal Water District (WCWD), Butte, Colusa, Glenn, and Sutter Counties, CA. According to California Water Code Section 597 (CWC §597), agricultural water providers over 25,000 acres are required to measure the volume of water delivered to customers with sufficient accuracy to: (1) report aggregated farm-gate delivery data to the state and (2) adopt a pricing structure based at least in part on the volume of water delivered to each field. Mr. Ertis performed surveys of farm-gate deliveries to evaluate existing conditions, assisted in an effort to test alternative measurement methods that are potentially capable of satisfying the accuracy requirements of CWC §597 by performing flow measurements and data acquisition in the field and completing a water balance using different measurement methods on a specific canal reach, processing and analyzing datasets, and developing a report detailing existing conditions and presenting various options of improving flow measurement in order to comply with the accuracy standards presented in CWC §597.

Following this effort, Mr. Ertis has both assisted and led aspects of the development and implementation of a customer delivery measurement program that will satisfy the requirements of CWC §597. This included design and development of customer delivery measurement and water management tools used by district staff to record and manage deliveries and volumetric billing, development of a districtwide inventory and accounting database, implementation of tools and training with district staff members, and ongoing support for the customer delivery measurement program.

Agricultural Water Management Plan and Measurement Improvement Plan Development and Implementation, Yuba Water Agency, Yuba County, CA. Mr. Ertis assisted with development of the original Agricultural Water Management Plan (AWMP) for the YWA and led preparation of the 2020 AWMP update for submittal to the California Department of Water Resources. This preparation included drafting and/or editing document text; communicating with YWA staff to identify Agency efforts to implement Efficient Water Management Practices (EWMPs); and updating the YWA system-wide water budget (which included quantification of water demand and use).

The Yuba Water Agency (YWA) also moved forward to implement measures described in the Agency's Agricultural Water Measurement Plan (AWMP). This effort included the installation of multiple permanent flow measurement stations and the construction of conveyance system infrastructure. Mr. Ertis led the surveying and design of infrastructure improvements, participated in measurement station installations, and contributed to the construction management and inspection of the new infrastructure. Mr. Ertis also performed discharge measurements for velocity indexing purposes.

EDDY TEASDALE, PG, CHG

Principal Hydrogeologist

Title

Principal Hydrogeologist

Years of Experience

24

Education

MS, Hydrogeology, University of Idaho, Moscow

BS, Geology, University of Texas, Arlington

Professional Registrations

Professional Geologist
CA No. 7791; ID No. 1561

Certified Hydrogeologist
CA No. No. 926

Professional Affiliations

- California Groundwater Resources Association
- Butte County Well Drillers Advisory Group

Eddy Teasdale has over 24 years of experience working on geological and hydrogeological investigations in the United States and internationally. Projects have involved complex, comprehensive geology, hydrogeology, conveyance, flood control, and environmental issues. He has worked in all major aquifer types (alluvial basins, volcanic, carbonate and bedrock terrains). Eddy is an experienced project manager who has successfully managed large, complex projects. He has extensive experience in writing technical reports and working with local, state, and federal regulatory agencies including presenting project information and resolving project issues.

Eddy's primary areas of technical expertise are in hydrogeologic characterization and groundwater modeling. He is the current President of the North Sacramento Valley Groundwater Resources Association and is a member on the technical advisory committee for the Butte County Well Drillers Advisory Group.

EXPERIENCE

GSP/SGMA EXPERIENCE

Groundwater Sustainability Plan, Tehama County Flood Control and Water Conservation District, Tehama County: Led the development of 4 GSPs for the Bowman, Antelope, Los Molinos and Red Bluff Subbasins, including the technical work on the GSP chapters related to water budgets, sustainable management criteria, evaluating sustainability management actions and projects, and collaborating with the GSA and stakeholders.

Groundwater Sustainability Plan, Big Valley, Lake County: Led the development of the Big Valley Basin GSP, including the technical work on the GSP chapters related to water budgets, sustainable management criteria, evaluating sustainability management actions and projects, and collaborating with the GSA and stakeholders.

Groundwater Sustainability Plan, Westside Subasin, Westlands Water District, San Joaquin Valley, CA: Provided senior guidance on technical and policy support to the GSA for the Westside Subbasin. Oversaw technical activities including basin description and water budgets. Guided the client through the process to develop sustainability management criteria and helped to coordinate projects and management actions. Also the project manager who oversaw the design, installation, and testing of 5 multi-completion monitoring wells that will be integrated into the current monitoring program.

Groundwater Sustainability Plan, McMullin Area Groundwater Sustainability Agency, Kings Subbasin, Kerman, CA: Provided technical assistance to the GSA's legal counsel. Specific tasks included leading a groundwater modeling analysis to evaluate the impact of agricultural pumping in the basin to help refine the overall water budget, developing a sub-basin water budget, identifying possible projects and management actions, including an assessment on pumping allocations and the effects that would have on defining sustainability indicators.

Groundwater Sustainability Technical Support, Turner Island Water District, Merced and Delta Mendota Sub-basins: Reviewed all work being prepared by the Subbasins and GSA consultant. Tasks included review of all GSP chapters, technical assistance to improve the understanding and management of water resources, and refined and further characterized areas of potential recharge.

SGMA Support, Indian Wells Valley, CA: Appointed to the Technical Advisory Committee (TAC) to the Indian Wells Valley (IWV) Cooperative Groundwater Management Group (CGMG) while at Kennedy Jenks (KJ). KJ represented a large alfalfa grower on the TAC. In 2014, municipal, agricultural, domestic, China Lake (US Navy), and mineral exploration groundwater use exceeded 25,000 acre-feet per year (AFY). Estimates for safe yield in this basin range from approximately 7,500 to 10,000 AFY and groundwater levels have been declining on average between 1 to 3 feet/year. In August 2015, the DWR designated IWV a critically over-drafted basin. Served as a trusted advisor in planning for implementation of the GSP through regional coordination.

BUTTE COUNTY EXPERIENCE

Chico Urban Area Nitrate Compliance Program (CUANCP), Butte County, CA: Managed the CUANCP, which involved semiannual to annual groundwater monitoring to evaluate trends in nitrate concentrations in groundwater beneath the Chico urban area. As the program evolved over the past few years, the list of analytes grew to include isotopic sampling of groundwater along with other key-indicator constituents of septic waste such as acesulfame-K. The isotopic relationships in groundwater beneath densely populated areas on septic systems compared to agricultural areas have become the focus for monitoring to evaluate impacts to the shallow aquifer. The monitoring program has shifted from tracking simple nitrate concentration trends, to evaluating trends in specific areas that should show nitrate concentration decreases with time due to destruction of septic systems, or where agricultural use contributes some portion of the nitrate loading seen in the monitoring results. The objective of the recent changes in the program is to facilitate long term tracking of related isotopes to distinguish fractionation of septic wastes in the shallow aquifer and a reduction of those wastes over time.

Groundwater Sampling, Analysis and Reporting, Butte County, CA: Coordinated the sampling and analysis for the semiannual groundwater monitoring to evaluate trends in nitrate concentrations in groundwater beneath the Chico urban area in response to a Regional Water Quality Control Board Prohibition Order restricting the use of individual septic systems in high density residential areas. The project tracks nitrate concentration trends in groundwater in response to construction of a new sewer pipeline. As new residential connections are established and septic systems are abandoned, nitrate concentrations in shallow groundwater should decrease. Assisted in the semiannual reporting.

Nitrogen Isotope Study, Chico, CA: Designed an investigation program for Butte County to assess the source of elevated nitrate in local groundwater. The City was seeking data that would indicate whether elevated nitrate concentrations were attributable to leaky water conveyance piping or to agricultural practices. The study relied on collecting groundwater samples from strategically located regional water wells and analyzing them for stable nitrogen isotopes and indicator parameters that are associated with municipal wastewater, agricultural fertilizers, and other livestock wastes.

Groundwater Evaluation and Modeling, Victor Industries Site, and Central Plume Site, State of California, Chico, CA: *Project Hydrogeologist.* Study included the evaluation of the aquifer system beneath the City of Chico and Butte County, a regional water balance, and detailed spatial and temporal correlation of groundwater pumping and influences in site monitoring wells. The project also involves development of a two 3-D numerical groundwater flow and transport models. The models are being used to aid in implementing an interim remedial design that will clean-up dissolved concentrations of trichloroethylene (TCE) and tetrachlorethene (PCE). The preliminary design includes two extraction wells, a treatment plan and injection of treated water.

Groundwater Well Installation, Chico Unified School District, Nord, CA: Provided technical oversight for the drilling, testing, and design construction of one 900-foot groundwater supply well to support drinking water at the Nord School. Provided review of the open hole geophysical logs to confirm producing zones, evaluated the borehole conditions for well completion, and evaluated and approved the final design of the well screen and casing. The identification of an elevated nitrate zone for potential isolation was also an issue at this site. Oversaw technical review of the well development and testing program, which included the successful development and aquifer testing of the well.

Groundwater Resource Investigation, Chico, CA: *Supervising Hydrogeologist.* Installation, site characterization and general testing of 6, 200-foot exploratory test borings. Testing involved general lithological characterization using sample cuttings and geophysical logs. Utilized downhole video, optical televiewer, and flowmeter equipment to further characterize an existing agricultural well.

Nitrate Well Assessment, Town of Paradise, CA: The project involved assessing the impacts to groundwater from septic systems. Assisted the Town in identifying potential contaminant sources. Preliminary data led to identifying data gaps, and installation of additional monitoring wells.

Chico Urban Area Nitrate Compliance Program, Chico, CA: Primary report author and lead geochemist for the evaluation of stable isotopes of water, boron, and nitrate, as well as the presence/absence of caffeine and artificial sweeteners Ace-K and sucralose to determine the source of nitrate in groundwater

Chico Central Plume (aka Flair Cleaners Site) Department of Toxic Substances Control (DTSC) Project, Chico, CA: The project consists of intermediate and deep aquifer groundwater extraction and treatment system expansion in central Chico. Groundwater contaminated with the dry-cleaning solvent PCE is extracted and treated with liquid granular activated carbon for unrestricted use. Shallow groundwater is treated in-situ with the chemical oxidant, potassium permanganate. Responsible for semiannual sampling of site monitoring wells using the Passive Diffusion Bag (PDB) method. Prepared monthly and semiannual monitoring reports including all site maps.

Victor (20th Street) DTSC Project, Chico, CA: *Geologist.* Remedial investigation and design at a former aluminum manufacturing facility contaminated with toxic metals and TCE. Responsible for semiannual sampling of site monitoring wells using the PDB method. Prepared monthly and semiannual monitoring reports including all site maps. Responsible for supervising and conducting field drilling and sampling, installation, abandonment and development of groundwater monitoring wells.

Southwest Plume Project, DTSC Chico, CA: Consists of characterization of the Southwest Plume, a PCE plume in groundwater originating in downtown Chico. Primary duties included groundwater collection, tracking and shipment of samples. Also responsible for using GIS to determine groundwater characteristics including flow direction and contaminant distribution.

Nance Canyon Partners, LP, Hydrogeological Input, Nance Canyon, Butte County, CA: Consulting services in support of a well siting project on 5,000 acres located near the City of Chico to site well(s) capable of providing water of sufficient quality and production to support grape vineyards, olive groves, and hops farming. Reviewed available historical project reports, public records, proposed project design to focus the site visit, determine possible data gaps, and aid in the planning level analysis. Conducted a site visit to stake three well locations.

Groundwater Resource Assessment, California State University, Chico (CSU-Chico), CA: Conducted construction and testing of the CSU-Chico Irrigation Well Relining Project. Prepared contractor bid documentation and an engineering cost estimate. Supervised all field related activities including geophysical investigation consisting of downhole video camera, caliper log and gyroscopic surveys, temporary removal of existing irrigation infrastructure, installation of well casing and screen relining, installation of temporary test pump, aquifer testing tasks and installation of permanent pump. Prior to relining activities, the irrigation well produced 500 gallons per minute (gpm) (with 150 feet of drawdown) and after relining the wells produced 1,200 gpm (with only 25 feet of drawdown).

VICKI J. KRETSINGER GRABERT, PH-GW

Senior Principal Hydrologist

Years of Experience

>30

Education

MS, Water Science,
University of California, Davis

BS, Environmental Toxicology,
University of California, Davis

Professional Registrations

Professional Hydrologist -
Ground Water No. 870
(American Institute of Hydrology)

Awards

- Keith E. Anderson Award, 2008
- Robert Storm Award, 2010
- Groundwater Resources Association of California Awards; President's Award, 2014; The Foundation, The Rock of GRA; GRA's Founding Mother, 1992-2014
- University of California Davis Alumni "2019 College of Agricultural and Environmental Sciences Award of Distinction"
- Charles Vernon Theis Award, 2021

Selected Professional Affiliations

- American Institute of Hydrology
- American Geophysical Union
- Association of Ground Water Scientists and Engineers
- California Groundwater Association

Vicki has more than 30 years of experience in regional groundwater resource management and quality assessments, including groundwater supply sufficiency and availability assessments, design of monitoring networks and programs, long-term groundwater quality monitoring and protection programs for twelve agricultural coalitions in the Central Valley, and groundwater technical assistance to the Central Valley Salinity Coalition since 2009. She worked with a County Groundwater Resources Advisory Committee for two and a half years at their regular bimonthly meetings to educate the Committee on the County's groundwater resources and to aid County staff and the Committee in community outreach and education efforts.

Vicki has been involved in SGMA from the beginning. As founding President of the Groundwater Resources Association of California (GRA) and director for 23 years, Vicki was heavily involved in groundwater related issues including the Sustainable Groundwater Management Act (SGMA) Groundwater Sustainability Plan (GSP) regulation development and feedback as part of GRA's Sustainable Groundwater Management Committee. Since 2015, she has served as a member of DWR's Practitioner Advisory Panel that is providing input to DWR on SGMA implementation. She contributed input on the Berkeley Law/UC Water paper on *Navigating Groundwater and Surface Water Interactions Under the Sustainable Groundwater Management Act* and reviewed and contributed input on the Recharge *Net Metering to Enhance Groundwater Sustainability*. She is highly familiar with the provisions of SGMA through extensive involvement in SGMA-related work in groundwater basins across California, including GSP development and annual reports.

EXPERIENCE

GSP/SGMA, and Groundwater Management, Napa County, CA: Vicki has provided regular technical reports to the Napa County Board of Supervisors since 2011. She was the principal in charge of an Alternative to a GSP. Subsequently, in the same basin, a groundwater flow model was developed in 2017 to assess various sustainability interests including surface water groundwater interaction and potential streamflow depletion factors, a SGMA Management Area was designated, a SGMA-related report on the Management Area was prepared and submitted to DWR in March 2018, and the first SGMA Annual Report was filed in March 2018.

Land Subsidence Analysis, CA: Managed preparation of a comprehensive report by LSCE, in conjunction with James W. Borchers and Michael Carpenter, focusing on the escalating occurrence and severity of land subsidence due to groundwater pumping in California.

The report, *Land Subsidence from Groundwater Use in California*, provides key examples of significant and far-reaching impacts of subsidence and includes recommendations to avoid those impacts. This report provides an analysis and examples from throughout California where groundwater pumping and land subsidence have been particularly significant and recommendations for improving subsidence monitoring and assessment.

Central Valley Salinity Alternatives for Long-Term Sustainability Program, CA: Managed LSCE's technical work as part of a four-consulting firm team that designed and implemented the Salt and Nitrate Sources Pilot Implementation Study, which was a key initial step in the effort by the Coalition toward the development of a Basin Plan amendment to address the issue of salt and nutrient management in California's Central Valley. The study developed and documented procedures and methodologies to quantify the significant salt and nitrate sources in the Central Valley. The procedures were piloted in selected areas to evaluate their appropriateness and region-wide applicability. LSCE's work focused on groundwater aspects of the study in the Yolo County study area. Salt and nitrate mass loads in the Yolo area were simulated and compared to historical groundwater quality observations. Subsequently managed conceptual modeling and technical analysis leading to the development of the Central Valley Salt and Nitrate Management Plan (CV-SNMP). The work is foundational for the more detailed, subregional analyses that will be undertaken later by local stakeholder groups when they develop local SNMPs.

Managed the preparation of high resolution groundwater quality maps for nitrate and TDS for three defined groundwater zones (Upper, Lower, and Production Zones) throughout the Central Valley Floor on behalf of the Central Valley Salinity Coalition to provides a more refined and accurate characterization of the ambient groundwater quality and assimilative capacity than what was provided previously as a part of the aggregated Initial Analysis Zones (IAZ) analysis. The high resolution detail will facilitate regional salt and nitrate management for Region 5's jurisdiction, including the planning and implementation of long-term strategies and assessment of interim measures and background information for identifying monitoring data gaps and for developing future groundwater quality monitoring programs.

Central Valley Representative Monitoring Program, CA: Provided technical support to the California dairy industry that ultimately resulted in the CVRWQCB's revision of the General Order Monitoring and Reporting Program, which led to the representative groundwater monitoring as an alternative to the CVRWQCB's site-by-site approach. The Phase 1 Representative Monitoring Program (RMP) Work plan provides a detailed discussion of the scientific basis supporting representative monitoring and the extrapolation of monitoring results, an explanation of the process of dynamic refinement, innovative monitoring well design specific to the needs of and requirements for the RMP, and a design of a comprehensive network of 135 dedicated monitoring sites on 18 dairy farms in Stanislaus and Merced Counties. Phase 2 of the RMP has also been completed; the RMP network now includes 42 dairies and over 400 monitoring wells.

GROUNDWATER ASSESSMENT REPORTS

East San Joaquin County, CA: Managed overall technical work for the development of East San Joaquin Water Quality Coalition's Groundwater Quality Assessment Report (GAR), as required by the Coalition's Waste Discharge Requirements for the Irrigated Lands Regulatory Program. LSCE developed a geostatistical method to quantitatively delineate relatively higher and lower vulnerability areas. The vulnerability of groundwater quality to agricultural impacts is being assessed and prioritized based on (1) hydrogeological sensitivity, (2) overlying land uses and practices, and (3) the beneficial uses of the groundwater.

Westside San Joaquin River, CA: Managed overall technical work for the development of Westside San Joaquin River GAR and a Groundwater Quality Management Plan, as required by the Coalition's Waste Discharge Requirements for the Irrigated Lands Regulatory Program. LSCE developed a geostatistical method to quantitatively delineate relatively higher and lower vulnerability areas. The vulnerability of groundwater quality to agricultural impacts was assessed and prioritized based on (1) hydrogeological sensitivity, (2) overlying land uses and practices, and (3) the beneficial uses of the groundwater.

Grassland Drainage Area, CA: Managed overall technical work for the development of Grassland Drainage Area GAR and a Groundwater Quality Management Plan, as required by the Waste Discharge Requirements for the Irrigated Lands Regulatory Program. The vulnerability of groundwater quality to agricultural impacts was assessed and prioritized based on (1) hydrogeological sensitivity, (2) overlying land uses and practices, and (3) the beneficial uses of the groundwater.

Western Tulare Lake Basin, CA: Managed overall technical work for the development of Western Tulare Lake Basin Area GAR, as required by the Coalition's Waste Discharge Requirements for the Irrigated Lands Regulatory Program. LSCE developed a geostatistical method to quantitatively delineate relatively higher and lower vulnerability areas. The vulnerability of groundwater quality to agricultural impacts was assessed and prioritized based on (1) hydrogeological sensitivity, (2) overlying land uses and practices, and (3) the beneficial uses of the groundwater.

ADDITIONAL EXPERIENCE

Northern and Southern Counties of the Central Coast Region, CA: Managed overall technical work for the groundwater quality characterization reports.

MUN de-designation Target Area of the Tulare Lakebed, CA: Managed LSCE's technical work as part of a multi-firm team identifying the background conditions and geographical extent relating to the proposed MUN de-designation Target Area of the Tulare Lakebed. The team addressed the purpose and need for the proposed MUN de-designation, a precise geographic description of the Target Area, regulatory requirements and circumstances relevant to the de-designation, a discussion of pertinent state and federal regulations, laws, and policies, and an overview of the proposed amendments to the Basin Plan. As part of this effort, Vicki reviewed and provided comprehensive comments on Ken Schmidt Draft Report (April 2013), *Hydrogeologic Evaluation of Delisting Part of the Tulare Lakebed Area*.

Water Supply Assessment, Rohnert Park, CA: Managed services provided on behalf of the City of Rohnert Park to prepare the groundwater portion of the Water Supply Assessment needed to satisfy the requirements of SB 610 and the City's Water Policy Resolution. The WSA was required due to six planning applications that meet the definition of a "project" under SB 610 or that require annexation to the City. The WSA includes water demands (surface and groundwater) that will occur as the City reaches build-out under its General Plan. The WSA also considers the demands of other pumpers in the groundwater basin.

Yolo County Groundwater Monitoring Program,CA: Managed an AB 303 Groundwater Monitoring Program for Yolo County on behalf of the Yolo County Flood Control and Water Conservation District (District). The project contained three phases, including Phase 1 – Data Collection, Evaluation, and Recommended Groundwater Monitoring Program; Phase 2 – Database Management System; and Phase 3 – Report of Baseline Groundwater Quality Conditions and State of Groundwater Conditions. The Project included review of the existing extensive groundwater level monitoring network (approximately 300 wells) and establishment of a groundwater quality monitoring network (approximately 110 wells) to gather and assess the necessary data to ensure the long-term protection of the basin. Managed LSCE's work to develop and implement a database management system for storage and evaluation of pertinent groundwater data, as well as for exchange of data with area cooperators, state and federal agencies and the public (via web site and other means) to promote coordinated and effective water resources management and dissemination of information on water resource management (especially groundwater conditions).

Vacaville Hydrogeologic Conditions Assessment, CA: Managed a comprehensive evaluation of current and historical hydrogeologic conditions in the vicinity of the City of Vacaville; prepared an SB 221/610 report as a supporting document to the City's WSA. Developed an initial estimate of sustainable pumpage for the principal aquifer in the Vacaville study area and the reasonably foreseeable impacts of projected municipal demands on the availability of water for agricultural and industrial users within the City water service area that are not currently receiving water from the City but are drawing water from the same aquifer.

Integrated Regional Water Management Plan, CA: Managed the support provided to CDM to prepare the Integrated Regional Water Management Plan developed for Solano County Water Agency and its member agencies. LSCE's support focused on hydrogeologic conditions in the plan area and groundwater-related planning efforts.

MultipleCompletion Groundwater Monitoring, Solano County, CA: Managed LSCE's work on the design and construction of multiple completion groundwater monitoring facilities at four locations within the Northern Solano County area. The data collected from the deep monitoring wells will aid in the ongoing assessment of basin conditions and groundwater management activities. Additional subsidence monitoring stations are also being implemented as an important component of the regional monitoring program. LSCE prepared a report that describes the physical conceptualization of the area complemented by groundwater level and quality data; this report includes a preliminary evaluation of depositional processes and an initial assessment of the sources of groundwater recharge for the basal Tehama Formation.

CAB M. ESPOSITO, GIT

Project Hydrogeologist

Years of Experience

10

Education

MS, Geosciences: Hydrology/ Hydrogeology (with Distinction), California State University, Chico

BS, Geology/Geochemistry, Northern Arizona University, AZ

Professional Registrations

Professional Geologist-in-Training No. 1240

Professional Affiliations

- California Groundwater Resources Association

Cab has over ten years of experience working on geologic and hydrologic projects. He began as an environmental geologist working on a range of remediation projects which included designing and implementing field sampling programs and coordinating with federal agencies. Sampling of environmental contaminants included sampling of soil, surface water, and groundwater. Additional responsibilities included mine remediation design, Phase I site assessments, hydrologic investigations, and groundwater modeling.

Cab has been involved in Groundwater Sustainability Plan (GSP) development since 2018, when he led the technical effort in Shasta Valley and worked on numerous other GSPs throughout California. He was involved with many different facets of GSP development, including conceptual model development, water budget calculations, public outreach, numerical model development, scenario analysis, and annual report development.

Cab has experience working in Butte County where he developed the 2022 Nitrate Sampling and Analysis Plan and developed the 2021 Drought Impact Analysis. He currently serves on the Technical Advisory Committee for the Chico State Ecological Reserve, Ċàk̓awì ódiknonà.

EXPERIENCE

Groundwater Sustainability Plan Implementation, Napa County, CA: *Staff Hydrogeologist.* Working on implementation of projects and management actions in Napa Valley, CA. Technical work includes processing model scenarios to inform management decisions and use remote sensing to quantify evapotranspiration. Monthly presentations to the Technical Advisory Group is done to inform them of ongoing work.

Groundwater Sustainability Plan, Siskiyou County, CA: *Project Scientist.* Led the technical aspects of the development of a Groundwater Sustainability Plan for Shasta and Butte Valley. Built a watershed scale, fully coupled GSFLOW model for the Shasta River Watershed. Led stakeholder meetings and public meetings to present findings and to increase public support. Coordinated with the State Water Resource Control Board for instream-flow requirement discussions within the watershed. Assisted in building and installing a data collection system consisting of Campbell Scientific data loggers, pressure transducers, weather stations, and solar panels.

Big Valley Groundwater Sustainability Plan Annual Report Development, Lake County, CA: *Staff Hydrogeologist.* Assisted in preparing the 2021 Big Valley Annual Report.

Drought Impact Analysis, Butte County, CA: *Project Scientist.* Developed the Drought Impact Analysis while working closely with economists from California State University, Chico to estimate the water use and impacts of the 2021 drought. He coordinated with water providers to estimate municipal water use and irrigation districts to estimate applied water. He was responsible for presenting the results to the Butte County Board of Supervisors.

Watermaster Services, Santa Maria Valley Management Area: *Project Hydrologist.* Santa Maria Valley Management Area is an adjudicated groundwater basin which requires annual water accounting. Cab is responsible for the water accounting within the valley. He aids in the management of the data, including climate data, groundwater levels, pumping, and water quality.

Fort Knox Gold Mine, Fairbanks, AK: *Project Geologist.* Conducted a hydrogeologic field investigation to assist in permitting of future mine expansion.

Platoro Mine, Platoro, CO: *Project Geologist.* Conducted bench-scale analysis of the water treatment plant. Collected water samples from shallow groundwater wells, open channels, treatment ponds, and within wastewater treatment facility. Standard field parameters and analytes of concern were measured on site to evaluate the water treatment plant efficiency. Management of the hydrologic database including groundwater measurements, streamflow, and climate data.

Removal Design/Removal Action at a Uranium Mine Site, Cibola County, NM: *Project Geologist.* Supported radiological site characterization of a historic uranium mine. Collected radiological surface and subsurface soil samples, measured static direct gamma radiation levels, conducted gamma scans, and performed debris surveys. Assisted in development of closure plans, provided construction oversight of large earthworks activities, and conducted quality assurance and quality control testing during remediation construction activities.

Midnite Mine Superfund, Wellpinit, WA: *Project Geologist.* Responsible for rock fall safety analysis for pit walls. Part of the design team for the 30%, 60%, and 90% Basis of Design reports.

Probabilistic Seismic Hazard Analysis, Blanding, UT: *Project Geologist.* Responsible for a probabilistic seismic hazard analyses to calculate anticipated ground motion at the site resulting from an earthquake. This analysis was conducted to support geotechnical design of new facilities in the short-term and reclamation efforts in the long-term.

Tampa Election Company Injection Well, Tampa, Fl: *Project Geologist.* Supervised drilling activities for a wastewater injection well and associated monitoring well. Responsibilities included geologic characterization from drill cuttings, reviewing geophysical logs, conducting aquifer tests, and construction management of casing installation.

NICK WATTERSON, PG, CHG

Principal Hydrogeologist

Nick has over 20 years of experience studying surface and groundwater hydrology. He has extensive experience with the acquisition, analysis, and display of geospatial water resources data for projects of widely ranging spatial extent and data complexity. His experience includes quantification of groundwater supply and aquifer storage capacity; characterization of aquifer and well mechanics, well construction design, well rehabilitation program design and implementation; evaluation of groundwater-surface water interactions; and hydrologic modeling in varied hydrogeologic settings of California and Colorado. His recent work has involved evaluation of groundwater conditions in agricultural areas and providing technical support for local entities during implementation of the Sustainable Groundwater Management Act (SGMA).

Years of Experience

20+

Education

MS, Geography (Hydrology),
Oregon State University

BA, Geology,
The Colorado College

Professional Registrations

Professional Geologist
CA No. 9076

Certified Hydrogeologist
CA No. 1088

Professional Affiliations

- National Ground Water Association
- California Groundwater Resources Association

EXPERIENCE

Groundwater Sustainability Plans

Ongoing work in preparation of Groundwater Sustainability Plans (GSP) in multiple groundwater subbasins in California. Provided technical support on development and implementation of GSPs and preparation of GSP Annual Reports in the Solano, Napa Valley, Madera, Chowchilla, and other subbasins in the Sacramento and San Joaquin Valleys. Support on GSPs has involved hydrogeologic characterization and conceptual model development, hydrologic modeling, water budget and sustainable yield analysis, evaluation of potential projects and management actions to achieve or maintain sustainability, and other technical work related to compliance with SGMA. Work supporting implementation of GSPs has included conducting well inventories, monitoring of groundwater and surface water conditions, evaluation and design of recharge project opportunities and management actions, and outreach to stakeholders.

- Madera Subbasin GSP – Madera County
- Chowchilla Subbasin GSP – Chowchilla Water District
- Napa Valley Subbasin GSP – Napa County
- Solano Subbasin GSP – Solano GSA
- Westside Subbasin GSP – Westlands Water District
- Bowman, Los Molinos, Red Bluff, and Antelope Subbasin GSPs – Tehema County

Technical Evaluations and Monitoring Programs

Designed and implemented technical evaluations and monitoring programs to assess aquifer and groundwater characteristics and interconnections with surface water.

- Designed and performed well and aquifer testing programs to investigate aquifer and well characteristics and evaluate impacts of pumping on local groundwater and surface water.
- Included monitoring programs in Napa, Mendocino, Sacramento, Yolo, and Solano Counties. Involved analysis and reporting of monitoring data including streamflow and stage, groundwater levels, and water quality characteristics to understand relationships between the surface water and groundwater systems.
- Evaluated feasibility of using vertical wells or a horizontal infiltration gallery for diversion of Russian River underflow as an alternative to direct streamflow diversion.

Agriculture Technical Assistance

Provided technical assistance to agricultural coalitions encompassing more than 8.5 million acres.

- Included over 1.7 million acres of irrigated land, in the Central Valley. Included preparing Groundwater Quality Assessment Reports (GARs), Groundwater Quality Management Plans, and Groundwater Quality Trend Monitoring Work Plans to fulfill requirements of the Irrigated Lands Regulatory Program.
- Evaluated quantitative relationships between groundwater quality and hydrogeologic characteristics using statistical techniques to assess groundwater vulnerability.
- Developed quantitative priorities for monitoring areas and designed plans for groundwater quality management and regional groundwater quality trend monitoring.

Hydrogeologic Modeling

Developed and performed hydrologic modeling to support water resources management planning decisions in groundwater basins and subbasins throughout northern California.

- Developed and applied integrated hydrologic models using the MODFLOW and IWFM platforms to estimate water budgets, analyze the benefits and impacts from water resources projects, and evaluate influence of future hydrology and climate change.
- Utilized regional models developed by USGS (CVHM) and DWR (C2VSim and SVSim) to support water resources assessments in areas of the Central Valley.
- Updated, refined, and applied the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) to support analyses of a water supply project involving the construction and operation of slant wells installed beneath the Monterey Bay seafloor.

Water Resource Assessments

Performed water resource assessments in Colorado including hydrogeologic characterization and evaluation of potential for developing groundwater as a source of supply.

- Developed three-dimensional hydrostratigraphic models in basins throughout Colorado using surface and subsurface geologic and geophysical data to map the configuration of geologic units including evaluating aquifer depths, thickness, groundwater elevation, and storage capacity.
- Prepared and assembled surface hydrologic models using HEC-RAS and FLO-2D modeling software to simulate effects of a water release from a mine drainage tunnel and post-wildfire hydrology and sediment transport in watersheds in Colorado.
- Completed aquifer recharge and storage studies for the Lost Creek and Upper Black Squirrel Creek basins, Colorado. Mapped bedrock and alluvial aquifer configuration; estimated existing and potential groundwater storage; identified locations for recharge project implementation.
- Managed and served as principal scientist on project assessing the vulnerability of groundwater to contamination in a complex mountainous hydrogeologic setting near Crested Butte, Colorado. Applied the EPA-developed DRASTIC semi-quantitative model using GIS to evaluate groundwater resource vulnerability to potential surface contamination.

ANDREW FRANCIS, GIT

Project Hydrogeologist

Years of Experience

5

Education

MS, Hydrogeology,
Illinois State University, Normal, IL

BS, Geology, Wittenberg
University, Springfield, OH

Professional Registrations

Geologist in Training
CA No. 1094

Professional Geologist
Idaho 1717; Oregon G2750

Professional Affiliations

- American Water Works Association
- American Geophysical Union
- Groundwater Resources Association

Andrew has five years of professional experience in groundwater consulting working on projects in California, Idaho, Oregon, and Utah. His expertise is in hydrogeological conceptualization and has worked on multiple projects providing well design and construction oversight. Andrew is also well versed in GIS including geospatial analysis, mapping, and managing large geospatial datasets. He has worked in a variety of geologic settings including alluvial basins, volcanics, and bedrock terrains. A majority of his experience has been related to the development and implementation of Groundwater Sustainability Plans (GSPs) throughout California. This has included characterization of geologic and groundwater conditions, technical writing, and technical advisory committee participation.

EXPERIENCE

Delta-Mendota Groundwater Sustainability Plans, Fresno County, CA: *Hydrogeologist/Project Hydrogeologist*. In order to comply with the Sustainable Groundwater Management Act (SGMA), many groundwater subbasin throughout California including the Delta-Mendota were required to develop a GSP. The Delta-Mendota Subbasin is comprised of six individual GSP's, two of which were prepared by LSCE (Farmers Water District and Fresno County). Andrew was lead on the developing the hydrogeological conceptual models, designing monitoring networks, and setting minimum thresholds and measurable objectives for the various groundwater sustainability indicators. He also was an active participate in the coordination meetings with the other Delta-Mendota GSP groups. Andrew has also been involved with preparing annual reports for Farmers Water District and Fresno County.

Tehama County Groundwater Sustainability Plans: *Hydrogeologist*. Assisted with the development of four GSPs in Tehama County, CA. Analyzed shallow groundwater conditions for the identification of groundwater dependent ecosystems. This included utilizing publicly available database for well construction and water level data.

Westside (Westlands) Subbasin Groundwater Sustainability Plan, Fresno County, CA: *Hydrogeologist*. Assisted with the development of the Westside Subbasin GSP. Developed water level contours and storage change calculations for GSP annual reports.

Santa Clara River Valley Subbasin Groundwater Sustainability Plan, Los Angeles County, CA: *Hydrogeologist*. Prepared groundwater conditions section for the Santa Clara River Valley Subbasin GSP. Presented (Zoom) at public workshops to interested stakeholders.

Indian Wells Valley GSP Support, Ridgecrest, CA: *Hydrogeologist*. Prepared technical memoranda on hydrogeologic conditions in the Indian Wells Valley Subbasin.

Mendota Pool Group Transfer Program, Fresno County, CA: *Hydrogeologist*. Assisted with the preparation of annual reports on groundwater and surface water conditions in the Mendota, California. Planned and conducted groundwater quality sampling events.

Ryer Island Drawdown Assessment, Solano County, CA: *Project Hydrogeologist*. Preformed analytical drawdown analysis for planned vineyard. Determined approximate pumping rate to drawdown water table below root zone.

Santa Clarita Water Agency (Formerly Castaic Lake Water Agency) Annual Water Supply Reporting, Santa Clarita, CA: *Hydrogeologist*. Assisted with the preparation of annual water supply reports. Created water level contour maps, hydrographs, and evaluated groundwater quality data.

Groundwater Baseline Report, Malheur County, OR: *Project Hydrogeologist*. Provided revisions for Groundwater Baseline Report. Addressed comments provided by the Bureau of Land Management (BLM) and Oregon Department of Geology and Mineral Industries (DOGAMI). Presented revision to report to BLM and DOGAMI.

Idaho Landfill Well Siting, Adams County: *Project Hydrogeologist*. Conducted a site visit and reviewed available geologic data to determine locations for monitoring wells. Prepared a technical memorandum providing well locations and rationale for those future well sites.

New Subdivision Groundwater Use/Drawdown Assessments, Various sites in Idaho: *Project Hydrogeologist*. Conducted multiple drawdown analysis for new subdivision throughout Idaho. Determined the impact of new domestic wells on existing groundwater conditions. Attended zoning hearings and community meetings to discuss the results of drawdown assessments.

Irrigation Well Testing, Rich County, UT: *Project Hydrogeologist*. Performed pumping testing monitoring flow rate and water levels to determine well capacity. Reviewed available geologic information and made recommendation for new well location. Prepared memo documenting well testing and proposed well locations.

Hart Mountain National Antelope Refuge Downhole Video Log and Well Reconnaissance, Plush OR: *Project Hydrogeologist*. Performed downhole video log on existing well and provided recommendation for new well location

City of Lathrop ASR Feasibility Study – Monitoring Well Permitting and Design, Lathrop, CA: *Project Hydrogeologist*. Prepared permits and provided specifications for monitoring well design as a part of an aquifer storage and recovery project.

City of Meridian Municipal Supply Well, Meridian, ID: *Project Hydrogeologist*. Provided oversight for well construction and well testing and prepared well completion report for City of Meridian public supply well.

City of Kuna Test Well and Municipal Supply Well, Kuna, ID: *Project Hydrogeologist*. Provide well design, construction and testing oversight, and prepared well completion report for test and a public supply well for the City of Kuna.

Buckeye Farms Irrigation Wells, Hagerman, ID: *Project Hydrogeologist*. Provided construction and well testing oversight for two large irrigation well (~8-10 CFS).

City of Boise Well Park Well Cleaning, Boise, ID: *Project Hydrogeologist*. Performed downhole video survey, developed specification, and oversaw well cleaning for park well that lost production due to clogged screens. Methods included bailing, swabbing, packer pumping, and chemical cleaning.

Pre-Engineering Report for Crouch Community Church, Crouch, ID: *Project Hydrogeologist*. Conducted site visit, pumping test, and prepared preliminary engineering report for previously constructed public supply well confirming all regulatory requirements were met.

Pre-Engineering Report for Oregon Military Department, Boardman, OR: *Project Hydrogeologist*. Conducted site visit, pumping test, and prepared preliminary engineering report for previously constructed public supply well confirming all regulatory requirements were met.

Pre-Engineering Report for Idaho Power Fish Hatcher, Wendell, ID: *Project Hydrogeologist*. Conducted site visit and prepared preliminary engineering report for planned public supply well.

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 6. Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement

6.a. *Approve Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $438,000 without prior approval. (CGA or GGA action)

6.b. *Approve sharing cost of Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $219,000 (50 percent of total cost) without prior approval. (CGA or GGA action)

Date: September 19, 2025

Background

In January 2022, the Glenn Groundwater Authority (GGA) and Colusa Groundwater Authority (CGA) submitted the initial Colusa Subbasin Groundwater Sustainability Plan (GSP). In October 2023, the CGA and GGA were notified by the Department of Water Resources (DWR) that the GSP was deemed incomplete. The CGA and GGA were given 180 days to address the deficiencies identified by DWR, which culminated in the submittal of a Revised Colusa Subbasin GSP in April 2024. DWR advised the CGA and GGA of the approval of the Colusa Subbasin GSP in February 2025.

In addition to the annual report, the next major milestone for SGMA compliance is the completion of the GSP Periodic Evaluation, due January 28, 2027. The Periodic Evaluation is intended to be a self-evaluation of progress toward reaching and maintaining sustainability, including implementation of Projects and Management Actions (PMAs) as needed, filling data gaps, and addressing identified recommended corrective actions (from DWR's GSP determination letter), among other things.

During a Periodic Evaluation process, the GSAs may determine a Plan Amendment is necessary if significant or material changes are made. Under certain conditions, some of these changes could be made to more accurately capture new or revised information, planning and implementation activities, and updates to policies. GSAs may revise the GSP at any time, but if a Plan Amendment is submitted, it must be accompanied by a Periodic Evaluation.

Periodic Evaluations are reviewed by DWR.

The CGA and GGA requested a proposal from Davids Engineering to complete the 2027 Periodic Evaluation. Davids Engineering, teamed with West Yost Associates (collectively the DE Team), responded with the attached proposal outlining the steps necessary to successfully complete the Periodic Evaluation and Plan Amendment, focusing only of the efforts needed to adequately address DWR's recommended corrective actions. The proposal also includes two optional tasks based on potential data needs and on-call support. Tasks include:

1. Participate in Project Technical Meetings and Outreach
2. Prepare Periodic Evaluation
3. Prepare GSP Plan Amendment
4. Provide Data Collection Support (Optional)
5. Provide On-Call Support (Optional)

The total estimated cost of Tasks 1-3 is $307,000 (each GSA responsible for $153,500). The estimated cost of Tasks 1-5, including the optional tasks, is $438,000 (each GSA responsible for $219,000). A more detailed summary of the cost in included on page seven of the proposal.

There are sufficient funds in the CGA and GGA budgets to cover the expenses.

Recommendation

1. Discuss and select an agency to hold the contract and determine which tasks should be included in the agreement (Tasks 1-3 or Tasks 1-5).
2. Contracting Agency Action: Approve Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $438,000 (Tasks 1-5) without prior approval.
3. Cost-Share Agency Action: Approve sharing cost of Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment Agreement in an amount not to exceed $219,000 (50 percent of total cost) without prior approval.

Attachments

- Davids Engineering Proposal for Professional Engineering Services: Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment

Proposal for Professional Engineering Services

To:	Carol Thomas-Keefer and Lisa Hunter Program Managers Colusa Groundwater Authority and Glenn Groundwater Authority
From:	Davids Engineering, Inc. www.davidsengineering.com
Date:	September 19, 2025
Subject:	Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment

Davids Engineering, Inc. (DE) and West Yost Associates (WYA) (collectively referred to as the "DE Team") are pleased to provide this proposal to the Colusa Groundwater Authority (CGA) and Glenn Groundwater Authority (GGA) to prepare the Colusa Subbasin Groundwater Sustainability Plan (GSP) Periodic Evaluation and Plan Amendment due in January 2027, in fulfillment of the requirements specified in the GSP regulations (23 CCR[1] Section 356.4). The DE Team proposes to contract directly with the ---------- (CLIENT), although all work completed under this proposal will be performed for and under the guidance of both the CGA and GGA.

1 Project Overview and Objective

The Colusa Subbasin (Subbasin) is identified by the California Department of Water Resources (DWR) as a high priority basin subject to the requirements of the Sustainable Groundwater Management Act (SGMA) and the GSP regulations. The Colusa Subbasin GSP was developed by the CGA and the GGA Groundwater Sustainability Agencies (GSAs) through multi-year collaborative processes, most recently culminating in the April 2024 Revised Colusa Subbasin GSP. Throughout this time, the GSAs have proceeded in earnest with GSP implementation, and have continued to document their efforts and evaluate groundwater conditions each year in the GSP Annual Reports.

On February 27, 2025, DWR notified the GSAs that DWR had completed their review of the April 2024 Revised Colusa Subbasin GSP and determined the GSP was approved. DWR's approval letter also identified nine recommended corrective actions that the GSAs should consider and incorporate into the GSP during the first Periodic Evaluation.

Per the GSP regulations (23 CCR Section 356.4), the GSAs must evaluate the GSP at least every five years and provide a written assessment describing whether GSP implementation, including implementation of projects and management actions (PMAs), remains on-track to meet the sustainability goal for the Subbasin. The GSAs are now preparing to develop the first Periodic Evaluation by January 2027 (five years after initial GSP adoption), along with an accompanying Plan Amendment to address DWR's recommended corrective actions.

[1] California Code of Regulations, Title 23, Division 2, Chapter 1.5, Subchapter 2. Groundwater Sustainability Plans.

The DE Team will support the GSAs with preparation of the Colusa Subbasin GSP 2027 Periodic Evaluation and Plan Amendment (the Project). The Project will involve a comprehensive evaluation and written assessment of the April 2024 Revised Colusa Subbasin GSP following all applicable GSP regulations, accompanied by a GSP Plan Amendment to address the nine recommended corrective actions identified by DWR. The GSP Plan Amendment will focus only on those efforts needed to adequately address DWR's recommended corrective actions.

The Project will be completed in alignment with the GSP regulations, DWR's Periodic Evaluation guidance[2], and DWR's recommended corrective actions. These efforts will be completed with the intent of determining if (as well as how and where, to the extent possible) GSP implementation efforts remain on-track to achieve the Subbasin sustainability goal, or if they need to be adaptively intensified, revised, or refocused to achieve their intended benefits.

2 Project Approach

The DE Team will complete the Project by evaluating and using the best available science and information, especially new tools, data sources, and resources that have been made available since the GSP was initially developed (2022) and last revised (2024). The DE Team will also consider DWR's recent and forthcoming best management practices (BMP) guidance documents related to subsidence and interconnected surface water (ISW), and will incorporate recommendations from those BMPs to the extent they are available and applicable to the Project. The DE Team proposes a comprehensive approach building off past and ongoing work being performed by the DE Team on behalf of the GSAs and their member agencies within the Subbasin.

In view of regulatory requirements, new information identified during the April 2024 GSP revisions, and DWR's recommended corrective actions, it is anticipated that the Project will include:

- Description of significant new information that has been made available since the GSP was initially developed (2022) and last revised (2024).
- Description of current groundwater conditions for each applicable sustainability indicator relative to the sustainable management criteria (SMC).
- Description of PMA status updates, including progress made to implement the domestic well mitigation program and demand management program according to the timeline proposed in the April 2024 Revised Colusa Subbasin GSP.
- Evaluation of GSP content – including the hydrogeologic conceptual model, groundwater conditions, and water budget – in light of new data, changes in water use during GSP implementation, and the effects of PMAs and other actions taken by the GSAs.
- Reevaluation of the GSP monitoring networks, data gaps, and efforts or opportunities to fill data gaps and improve the GSP monitoring networks.
- Preparation of a GSP Plan Amendment focused on addressing DWR's recommended corrective actions.

[2] DWR, 2023. Groundwater Sustainability Plan Implementation: A Guide to Annual Reports, Periodic Evaluations, and Plan Amendments. October 2023.

- Summary of the GSAs' efforts to address DWR's recommended corrective actions, including the GSP Plan Amendment.

Specific Project work is described further in the proposed scope of professional services below.

3 Project Proposal

3.1 Scope of Services

The scope of professional engineering services to be performed by the DE Team is organized into five (5) tasks as described below.

The tasks described herein reflect the DE Team's professional interpretation of the best approach to fulfilling the requirements for the Periodic Evaluation as described in the GSP regulations, following DWR's Periodic Evaluation guidance document, and preparing a GSP Plan Amendment to address DWR's recommended corrective actions. Actual work under each task may deviate from that set forth herein based on coordination with the GSAs. To the extent deviation from that set forth below is required, the DE Team will coordinate with the GSAs as necessary.

Task 1. Participate in Project Technical Meetings and Outreach: This task will consist of the following activities:

1. Participate in technical coordination meetings with GSA staff to consult on the Periodic Evaluation and GSP Plan Amendment process, as needed, and discuss topic-specific questions (Assumes 12 two-hour meetings with up to four DE Team members, all held remotely).
2. Participate in outreach and education meetings during the Periodic Evaluation and GSP Plan Amendment process to engage with stakeholders and allow an opportunity to receive feedback (Assumes 2 two-hour meetings, two in-person attendees from the DE Team and two remote attendees).
3. Engage with GSA Boards and stakeholders at public GSA meetings (Assumes 4 two-hour meetings, two in-person attendees from the DE Team and two remote attendees).
4. Support GSA staff with preparing meeting agendas and meeting materials/exhibits for outreach meetings and GSA meetings (Assumes four hours per meeting for in-person attendees, two hours per meeting for remote attendees).

Task 2. Prepare Periodic Evaluation: This task includes efforts required per the GSP regulations (23 CCR Section 356.4) to prepare the Periodic Evaluation and describe whether GSP implementation is reasonably likely to achieve the sustainability goal for the Subbasin. This task will consist of the following activities:

1. Describe significant new information that has been made available since the GSP was initially developed (2022) and last revised (2024).
2. Describe current groundwater conditions for each applicable sustainability indicator relative to the SMC (measurable objectives, interim milestones, and minimum thresholds).
3. Describe PMA status updates and related benefits, and assess measures to mitigate overdraft.

4. Describe progress made to implement the domestic well mitigation program, demand management program, and other efforts according to the timeline proposed in the April 2024 Revised Colusa Subbasin GSP.
5. Evaluate the basin setting in light of new data from the GSP monitoring networks, new public data sources, changes in water use during GSP implementation, and the effects of PMAs and other actions taken by the GSAs.
6. Reevaluate the GSP monitoring networks, data gaps, and efforts or opportunities to fill data gaps and improve the GSP monitoring networks.
7. Describe relevant actions, regulations, ordinances, or other pertinent enforcement or legal actions taken by the GSAs to implement the GSP in furtherance of the Subbasin sustainability goal.
8. Summarize coordination between GSAs in the Subbasin, GSAs in neighboring subbasins, land use agencies, and other entities in the Subbasin, as appropriate, to better align their GSP implementation activities with achievement of the GSP sustainability goal.
9. Summarize the GSAs' efforts to address DWR's recommended corrective actions, including proposed or completed GSP amendments, as applicable.
10. Prepare the draft Periodic Evaluation for the GSAs' review.
11. Prepare and submit the final Periodic Evaluation to DWR.

Task 3. Prepare GSP Plan Amendment: This task includes efforts to address DWR's nine (9) recommended corrective actions in the GSP, which focus on the following:

1. Updating the water budget to account for revised overdraft estimates.
2. Providing updates and additional details about PMAs – including the domestic well mitigation program and demand management program – to ensure they are sufficient to achieve the Subbasin sustainability goal and interim milestones.
3. Identifying the locations of groundwater dependent ecosystems (GDEs), considering GDEs when setting SMC, and describing the methods used to delineate the spatial extent of SMC-related focus areas.
4. Considering how groundwater levels at the interim milestones will avoid causing undesirable results for other sustainability indicators.
5. Clarifying how beneficial uses and users were considered when establishing subsidence SMC and the conditions associated with "Yellow Light" and "Red Light" triggers, considering recommendations from DWR's subsidence BMP guidance as applicable.
6. Clarifying and considering updates to groundwater quality monitoring for constituents of concern, verifying that appropriate SMC are established, and coordinating with users of groundwater and regulatory agencies to better understand and avoid migration of constituents of concern.
7. Identifying ISW and updating related monitoring and SMC, considering and incorporating recommendations from DWR's ISW BMP guidance as available.
8. Providing updates on monitoring networks – including monitoring frequencies and locations – and efforts to improve monitoring and fill identified data gaps.
9. Providing updated contact information for the GSP plan manager and an updated discussion of the legal authority of the GSAs.

The GSP Plan Amendment will focus only on those efforts needed to adequately address DWR's recommended corrective actions.

Task 4. Provide Data Collection Support (Optional): The DE Team will support the CGA and GGA with data collection efforts related to the applicable sustainability indicators and GSP monitoring networks. Data collection efforts will be prioritized to fill data gaps identified in the Periodic Evaluation process, to gather additional data in high-priority areas with historical groundwater level decline and subsidence, and to meet other GSA-identified objectives. The collected data will be incorporated into analyses and summaries included in the Periodic Evaluation and/or GSP Plan Amendment. Data collection efforts may include the following, at the direction of the GSAs:

- Groundwater level monitoring support.
- Subsidence monument survey support.
- Sacramento River stream-aquifer interaction monitoring support.

Task 5. Provide On-Call Support (Optional): The DE Team will provide miscellaneous on-call support to the CGA and GGA as mutually agreed between DE and CLIENT.

3.2 Deliverables

The following deliverable(s) will be provided to CLIENT in electronic format:

Task 1. Participate in Project Technical Meetings and Outreach

- Outreach meeting presentation materials, as may be required.
- Public GSA governing body meeting materials related to the Periodic Evaluation process, as may be required.

Task 2. Prepare Periodic Evaluation

- Draft Periodic Evaluation for GSA review.
- Final Periodic Evaluation for submittal to DWR.

Task 3. Prepare GSP Plan Amendment

- Draft GSP Plan Amendment for GSA review and public comment.
- Final GSP Plan Amendment for GSA approval and submittal to DWR.

Task 4. Provide Data Collection Support (Optional)

- Compilation and summaries of collected data.

Task 5. Provide On-Call Support (Optional)

- Other deliverables as mutually agreed between DE and CLIENT.

3.3 Assumptions

The following assumptions were made in developing this proposal. To the extent that these assumptions do not hold true, the effort and therefore the cost and schedule required to perform the professional services could be affected.

1. The number of meetings will follow the number outlined in Task 1.
2. Meetings will be held at the frequency and duration identified in Task 1.
3. Any deviation from the number and/or duration of meetings set forth in Task 1 will be billed on a time and materials basis in accordance with DE Team rates then in effect.
4. The DE Team will incorporate recommendations from DWR's subsidence and ISW BMPs to the extent they are available and applicable to the Project. Forthcoming updates to those BMPs may recommend further analyses not anticipated in this proposal, and may require associated changes or modifications to this scope of professional services.
5. The DE Team will complete only limited modeling to support the Project, as required, using DWR's recent C2VSimFG model, and will not complete extensive local refinements or calibration of the model.
6. The DE Team will not provide any legal guidance and/or direction.
7. The DE Team will not perform a Proposition 218 rate study and/or other rate analyses as part of this work.
8. No environmental permitting will be included in this work.
9. The DE Team reserves the right to augment the DE Team throughout the course of the Project as deemed necessary for successful completion of the Project.
10. All deliverables, unless mutually agreed upon prior to finalization, will be provided in an electronic format.
11. CLIENT will be the lead organizer for all GSA Board and outreach meetings, including noticing of meetings.
12. CLIENT will provide required information requested by the DE Team in a timely manner.
13. The GSAs will provide prompt review and feedback on the Draft Periodic Evaluation and GSP Plan Amendment (Tasks 2-3).
14. CONSULTANT will contract with CLIENT for all tasks, although the costs for all tasks will be paid by the CGA and GGA in a 50/50 split.
15. One round of comments from the GSAs is included in this proposal.
16. Development of new monitoring protocols will not be required to complete the Periodic Evaluation process. The DE Team will instead rely on standard, established monitoring protocols of available data to be refined as needed.
17. Prior to initiation of additional work, anything outside the scope set forth herein will be agreed to by CLIENT and the DE Team in writing, including a specified budget (using the DE Team rates then in effect) and schedule.

3.4 Schedule

The DE Team proposes to complete all Project work by January 28, 2027 (Table 1). Work will progress to meet milestones on a timeline as defined in the table below. Delays in the notice to proceed from CLIENT will result in corresponding delays or shifts to the subsequent milestones. Schedule implications or deviations from the milestone dates that occur during the work will be made known to CLIENT as soon as practicable.

Table 1. Summary of project schedule including key milestones and milestone dates.

Milestone	Milestone Date
Notice to Proceed	September 19, 2025
Presenting Updates at GSA Board Meetings	March-September 2026 (Varied Dates)
Data Collection Support (Optional)	September 2025-September 2026
Draft GSP Plan Amendment distributed for public review	September 15, 2026
Draft Periodic Evaluation distributed for GSA review	October 15, 2026
Final GSP Plan Amendment approved by GSA Boards	January 2027 (Varied Dates)
Final Periodic Evaluation and GSP Plan Amendment submitted to DWR	January 28, 2027

3.5 Cost Proposal

The estimated budget required to perform the work described above is $307,000 excluding optional tasks, and $438,000 including optional tasks. For budgeting purposes, a detailed budget was prepared and is provided in Table 2. While estimated costs are based on a detailed task-by-task buildup, actual Project costs will not necessarily be tracked on a task basis, nor will individual task budgets constrain charges for work performed up to the total estimated budget. However, the optional task budgets (Tasks 4-5) will only be utilized with written approval from the CLIENT.

Table 2. Project estimated budget summary by task.

Task Number	Task Name	DE Labor Cost	WYA Labor Cost	Direct Cost	Estimated Total Cost
1	Participate in Project Technical Meetings and Outreach	$25,000	$25,000	$1,000	$51,000
2	Prepare Periodic Evaluation	$73,000	$39,000	$0	$112,000
3	Prepare GSP Plan Amendment	$69,000	$75,000	$0	$144,000
4	Provide Data Collection Support (Optional)	$73,000	$18,000	$0	$91,000
5	Provide On-Call Support (Optional)	$20,000	$20,000	$0	$40,000
Totals	**Tasks 1-3 (Excluding Optional)**	**$167,000**	**$139,000**	**$1,000**	**$307,000**
Totals	**Tasks 1-5 (Including Optional)**	**$260,000**	**$177,000**	**$1,000**	**$438,000**

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 7. Groundwater Demand Management Program Development

Date: September 19, 2025

Background

The CGA and GGA Groundwater Demand Management Ad Hoc Committees have been meeting jointly, generally with consultant support, to discuss and prepare recommendations to the GSAs on the development of a Groundwater Demand Management Program.

At the April 18, 2025 CGA-GGA Joint Board meeting, direction was given to develop a Request for Proposals (RFP)/Request for Qualifications (RFQ) for an accounting system solicitation and to prepare an RFP/RFQ for remote sensing solicitation. Given the nature of an RFQ, the committees have been working with GSA staff on the RFQ process without consultant support. The RFQ for a water accounting system was issued July 25, 2025. The joint ad hoc committee is reviewing proposals and coordinating for interviews.

The tentative timeline is shown below, which coincides with scheduled Joint Board meetings.

Event	Anticipated Date/Time (Subject to Change)
Issue RFQ	July 25, 2025
Final Date to Submit Questions and Request Clarification	August 8, 2025, 4:00 PM
Questions Answered via Addendum(s)	August 15, 2025
RFQ Submittals Due	August 29, 2025, 4:00 PM
Selection Committee Review	~~September 5, 2025~~ September 8, 2025
Respondent Interviews	~~September 8 to September 12, 2025~~ September 26 to October 3, 2025
Award of Contract	~~September 19, 2025~~ October 17, 2025

Ad Hoc Committee Members

CGA: Lewis Bair, Kate Dunlap, Jeff Moresco, Frank A. Nobriga, Jim Wallace

GGA: John Amaro (or Jeff Sutton), Mark Lohse (or Seth Fiack), Chuck Schonauer (of Justin Dahl)

Recommendation

Information only. Provide direction to staff, consulting team, legal counsel, and or committees as needed.

Attachments

- None

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 8. Domestic Well Mitigation Program Development

Date: September 19, 2025

Background

The CGA and GGA Well Mitigation Ad Hoc Committees have been meeting jointly, with consultant support, to discuss and prepare recommendations to the GSAs on the development of a Domestic Well Mitigation Program. A presentation will be given to provide information and facilitate discussion on the Domestic Well Mitigation Program Development.

Ad Hoc Committee Members

CGA: Lewis Bair, Janice Bell, Jeremy Cain, Jered Shipley

GGA: Grant Carmon, Brandon Smith (or Joe Goodman), Jered Shipley (or Gary Enos), Chuck Schonauer (or Justin Dahl)

Recommendation

Provide direction to staff, consulting team, legal counsel, and or committees as needed on the following recommendation and/or other program components.

1. Recommendations on program administration.
    - Recommendation 1: The CGA and GGA should proceed with the current form of the Domestic Well Mitigation (DWM) draft program administration and coordination structure developed through discussions with Colusa and Glenn County staff. (Final structure subject to mutual approval of the GSA Boards and Counties).
    - Recommendation 2: The CGA and GGA should coordinate regional DWM program development with Colusa and Glenn Counties and with the Corning Subbasin GSA (CSGSA, managing the Glenn County portion of the Corning Subbasin) to ensure consistency in DWM implementation across Colusa and Glenn Counties.
    - Recommendation 3: The CGA and GGA should develop formal agreement(s) with regional DWM program partners, including CSGSA, to formalize decisions related to DWM program oversight, administration, cost-sharing, and other topics as applicable.
    - Recommendation 4: The CGA and GGA, together with the CSGSA, should proceed with leading development of the regional DWM program, coordinating with Colusa and Glenn County staff as needed.

2. Recommendations on eligible mitigation, subject to revision per legal counsel input.
    - Recommendation 1: The DWM program should consider dual-purpose wells (i.e., wells that supply both drinking water and irrigation water supply) as drinking water wells potentially eligible for mitigation, subject to the standard well evaluation process and eligibility review criteria.
    - Recommendation 2: If the DWM program proposes mitigation measures that will deepen existing drinking water wells, or otherwise rehabilitate or replace such wells or pumps in such wells, the DWM program should propose in-kind replacement.
    - Recommendation 3: For eligible wells, the DWM program should offer applicants the most durable, cost effective permanent mitigation measure (i.e., the DWM program's proposed measure) based on available information and the DWM program's best determination using that information.
    - Recommendation 4: If an applicant wishes to deviate from the DWM program's proposed measure, the applicant should cover the additional cost of the mitigation measure of their choice (although the applicant should have access to funding from the DWM program up to the cost of the DWM program's proposed measure).
3. Recommendations on DWM program application and well evaluation.
    - Recommendation 1: The regional DWM program application or reporting form should have consistent content and questions applicable to all DWM program partners.
    - Recommendation 2: The regional DWM program application or reporting form should have alternative submittal options indicating whether the respondent wishes to submit a DWM program application (i.e., as an applicant) or a well incident report (i.e., as a reporting party).
    - Recommendation 3: All applicants to the DWM program should be charged an application fee of $150 that would be reimbursable if the application is determined to be eligible for DWM program services. The application fee and associated provisions are subject to revision per legal counsel input.
    - Recommendation 4: The DWM program administrator should serve as the lead for initiating the well evaluation, and should work with a single pre-determined contractor (or limited number of pre-determined contractors) to carry the well evaluation. It is anticipated that the GSAs will form some agreement or contract with the contractor outlining the well evaluation process, an agreed cost structure, prioritization of well evaluations, and other considerations.
    - Recommendation 5: If it is possible to resolve the well impact at the time of the well evaluation, the contractor should be authorized to complete the work necessary to resolve that issue, subject to specific review criteria and considerations pre-determined by the GSAs.

4. Recommendations on public outreach.
    - Recommendation 1: The GSAs should plan informational public outreach meetings prior to and following the initiation of the DWM program in January 2026.

Attachments

- Draft Presentation

Colusa Subbasin Groundwater Sustainability Plan Implementation Support

September 19, 2025

DRAFT

DAVIDS ENGINEERING, INC

COLUSA SUBBASIN

Outline

- Overview of DE Support
- Annual Report and Periodic Evaluation Requirements
- Domestic Well Mitigation Updates
- GSP Implementation Outreach Updates

Overview of DE Support

Details provided via live review of summary Gantt chart

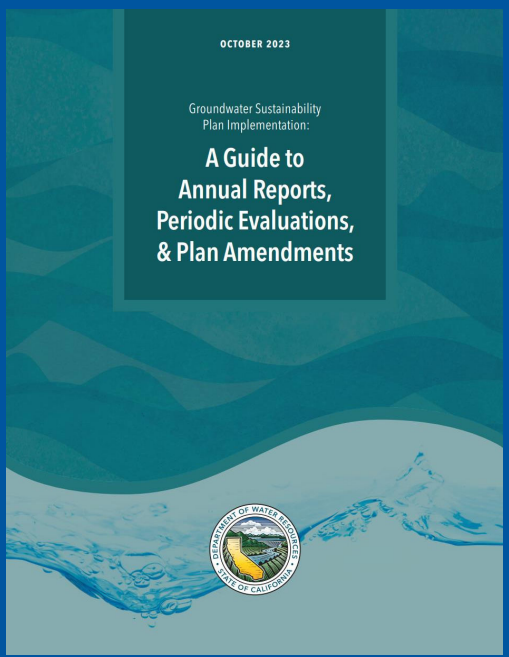
Annual Report and Periodic Evaluation Requirements

Annual Report Requirements

- Follow same basic approach as prior Annual Reports.
  - DWR found WY2024 Annual Report to be complete, requested no further information (July 2025 letter).
- Scope: Prepare Water Year (WY) 2025 Annual Report for Colusa GSP.
  - Update summary of groundwater conditions, water supply/use in WY2025.
  - Update projects, management actions, and GSP implementation efforts.
  - Present to GSA Boards, TACs.
  - Hold public outreach webinar in spring 2026.
- Budget: $59,200 total (from Nov 2022 multi-year proposal)

Periodic Evaluation Requirements

- Periodic Evaluations required at least every five years following GSP submittal (Jan 2027 for Colusa GSP)
- Purpose is to assess and describe progress toward GSP implementation and sustainability.
- Periodic Evaluation content includes:
  - Updates related to new data/information (basin setting, etc.)
  - Groundwater conditions relative to SMC
  - Updates to projects, management actions, and GSA actions
  - Monitoring network evaluation and updates
  - Outreach, engagement, and coordination
  - Summary of GSP revisions (Plan Amendment)
- Plan Amendment may accompany Periodic Evaluation
  - DWR included nine (9) recommended corrective actions for the GSP in their approval of the April 2024 Revised GSP .



Periodic Evaluation Overview

- Tasks include:
  1. Participate in Project Technical Meetings and Outreach
  2. Prepare Periodic Evaluation (report addressing specific regulation requirements)
  3. Prepare GSP Plan Amendment (limited extent)
     - Focused just on addressing DWR's recommended corrective actions
     - Assumes limited modeling using off-the-shelf DWR modeling tools
  4. Provide Data Collection Support (Optional)
  5. Provide On-Call Support (Optional)
- Budget:
  - Tasks 1-3 = $307,000 total
  - Tasks 4-5 (Optional) = $131,000 total
  - Total (Including Optional) = $438,000 total (each GSA responsible for $219,000)

Domestic Well Mitigation Updates

Domestic Well Mitigation (DWM) Program Development

- Updates on Regional Coordination Discussions
  - Colusa/Glenn Counties
  - North Valley Community Foundation (NVCF)
  - Corning Subbasin GSA (CSGSA, i.e., Glenn County portion of Corning Subbasin)
- Ad Hoc Recommendations
  - Program Administration
  - Eligible Mitigation
  - Program Application and Well Evaluation
  - Public Outreach

Updates on Regional Coordination Discussions

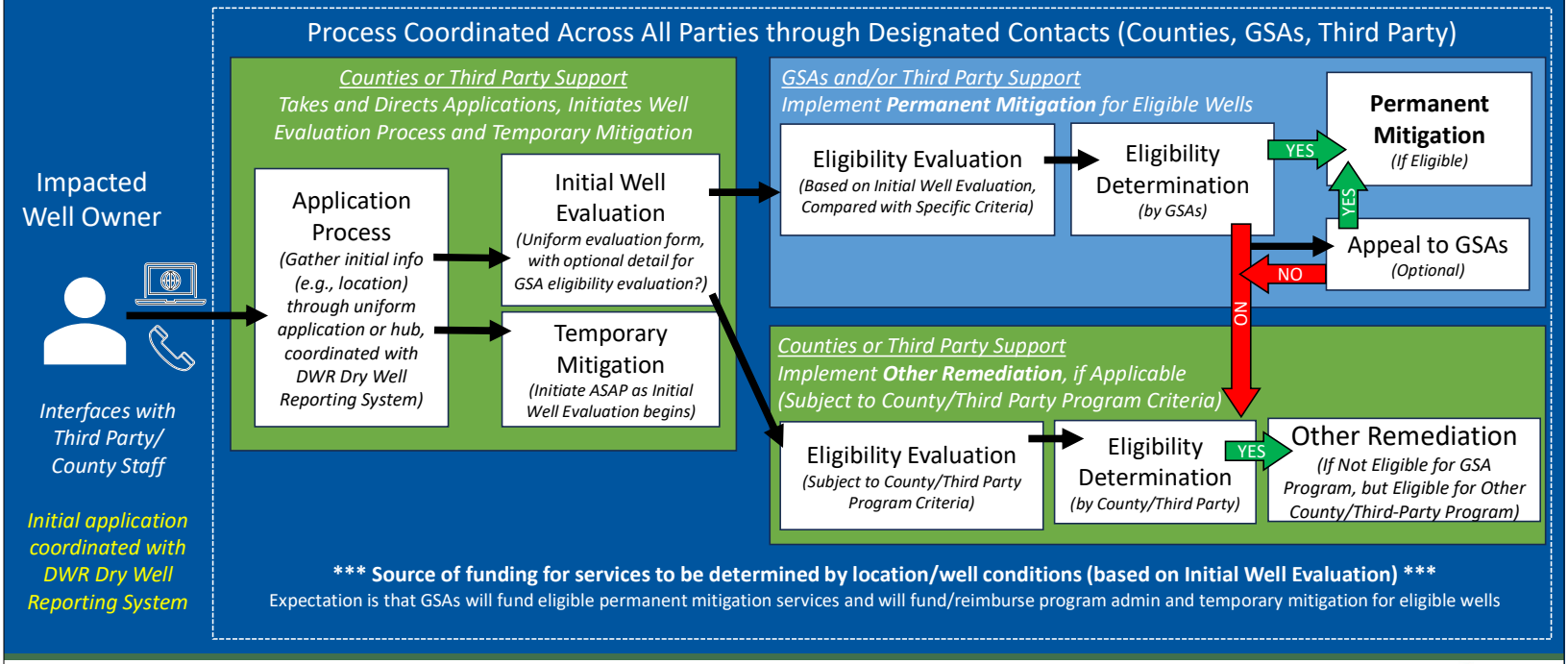
- Colusa/Glenn Counties:
  - Coordinating joint program admin and application/well incident reports.
  - Budgetary constraints, may not be able to contribute financially to shared admin.
- NVCF:
  - Open to short-term support to help get DWM program up and running.
  - Agreement pending legal input and Board/NVCF approval.
- Corning Subbasin GSA (CSGSA) coordination:
  - CSGSA Board in favor of pursuing regional approach with CGA/GGA.
    - Program Admin Recom. #2 – CGA/GGA to coordinate program implementation with CSGSA
  - Would need specific structure to guide admin. and cost-sharing decisions.
    - Program Admin Recom. #3 – Formalize DWM development decisions through agreement(s)
    - Structure of agreement(s) between CGA/GGA and CSGSA pending legal input/considerations

DWM Program Development
Ad Hoc Recommendations – Program Administration

Recommendation 1: The CGA and GGA should proceed with the current form of the DWM draft program administration and coordination structure developed through discussions with Colusa and Glenn County staff.

(Final structure subject to mutual approval of the GSA Boards and Counties).

DRAFT Program Administration and Coordination Structure (for Well Impacts within the Colusa Subbasin)



DWM Program Development
Ad Hoc Recommendations – Program Administration

Recommendation 2: The CGA and GGA should coordinate regional DWM program development with Colusa and Glenn Counties and with the Corning Subbasin GSA (CSGSA, managing the Glenn County portion of the Corning Subbasin) to ensure consistency in DWM implementation across Colusa and Glenn Counties.

DWM Program Development
Ad Hoc Recommendations – Program Administration

Recommendation 3: The CGA and GGA should develop formal agreement(s) with regional DWM program partners, including CSGSA, to formalize decisions related to DWM program oversight, administration, cost-sharing, and other topics as applicable.

DWM Program Development
Ad Hoc Recommendations – Program Administration

Recommendation 4: The CGA and GGA, together with the CSGSA, should proceed with leading development of the regional DWM program, coordinating with Colusa and Glenn County staff as needed.

DWM Program Development
Ad Hoc Recommendations – Eligible Mitigation

Subject to revision per legal counsel input.

Recommendation 1: The DWM program should consider dual-purpose wells (i.e., wells that supply both drinking water and irrigation water supply) as drinking water wells potentially eligible for mitigation, subject to the standard well evaluation process and eligibility review criteria.

DWM Program Development
Ad Hoc Recommendations – Eligible Mitigation

Subject to revision per legal counsel input.

Recommendation 2: If the DWM program proposes mitigation measures that will deepen existing drinking water wells, or otherwise rehabilitate or replace such wells or pumps in such wells, the DWM program should propose in-kind replacement.

DWM Program Development
Ad Hoc Recommendations – Eligible Mitigation

Subject to revision per legal counsel input.

Recommendation 3: For eligible wells, the DWM program should offer applicants the most durable, cost-effective permanent mitigation measure (i.e., the DWM program's proposed measure) based on available information and the DWM program's best determination using that information.

DWM Program Development
Ad Hoc Recommendations – Eligible Mitigation

Subject to revision per legal counsel input.

Recommendation 4: If an applicant wishes to deviate from the DWM program's proposed measure, the applicant should cover the additional cost of the mitigation measure of their choice (although the applicant should have access to funding from the DWM program up to the cost of the DWM program's proposed measure).

DWM Program Development
Ad Hoc Recommendations – Program Application, Well Eval.

Recommendation 1: The regional DWM program application or reporting form should have consistent content and questions applicable to all DWM program partners.

DWM Program Development
Ad Hoc Recommendations – Program Application, Well Eval.

Recommendation 2: The regional DWM program application or reporting form should have alternative submittal options indicating whether the respondent wishes to submit a DWM program application (i.e., as an applicant) or a well incident report (i.e., as a reporting party).

DWM Program Development
Ad Hoc Recommendations – Program Application, Well Eval.

Subject to revision per legal counsel input.

Recommendation 3: All applicants to the DWM program should be charged an application fee of $150 that would be reimbursable if the application is determined to be eligible for DWM program services. The application fee and associated provisions are subject to revision per legal counsel input.

DWM Program Development
Ad Hoc Recommendations – Program Application, Well Eval.

Recommendation 4: The DWM program administrator should serve as the lead for initiating the well evaluation, and should work with a single pre-determined contractor (or limited number of pre-determined contractors) to carry the well evaluation. It is anticipated that the GSAs will form some agreement or contract with the contractor outlining the well evaluation process, an agreed cost structure, prioritization of well evaluations, and other considerations.

DWM Program Development
Ad Hoc Recommendations – Program Application, Well Eval.

Recommendation 5: If it is possible to resolve the well impact at the time of the well evaluation, the contractor should be authorized to complete the work necessary to resolve that issue, subject to specific review criteria and considerations pre-determined by the GSAs.

DWM Program Development
Ad Hoc Recommendations – Public Outreach

Recommendation 1: The GSAs should plan informational public outreach meetings prior to and following the initiation of the DWM program in January 2026.

Next Steps

- Discuss and provide direction to the Committee and staff on next steps.
- Review 2025 Joint Board Meeting Schedule:
  (third Friday of the month from 1:00 to 4:00 PM)
  - September 19, 2025 from 1:00 PM to 4:00 PM
  - October 17, 2025 from 1:00 PM to 4:00 PM
  - November 21, 2025 from 1:00 PM to 4:00 PM
  - December 19, 2025 from 1:00 PM to 4:00 PM

GSP Implementation Outreach Updates

Key Activities Checklist

1. Identify Audience and Develop Key Messaging (Aug – Sept)
2. Develop Suite of Outreach Materials (Sept – Oct)
3. General Distribution and Access (Oct 2025 – March 2026 and beyond)
4. Train-the-Trainer (Oct 2025 – Mar 2026)
5. Public Meetings (Q1 2026)
6. Leverage Other Outreach Efforts (Ongoing)

Questions and Discussion

Staff Report

To: CGA-GGA Joint Board

Agenda Item: 9. Colusa Subbasin Outreach

Date: September 19, 2025

Background

Over the past several months, the CGA and GGA have focused many conversations on the importance of outreach, particularly as the basin develops the demand management and well mitigation programs. In June 2025, CGA approved a Task Order with Davids Engineering, Inc. to, among other tasks, provide support for GSP implementation outreach efforts. In July 2025, the GGA agreed to contribute a 50 percent cost share for this project.

The Davids Engineering Team includes local outreach specialists, teamed with the Davids Engineering technical team (collectively DE Team) to assist the CGA and GGA in creating and implementing an outreach strategy to effectively engage with local stakeholders. The local outreach specialists include Water and Land Solutions, focusing on the GGA, and Wise Acre Farms, focusing on the CGA. The DE Team is working with staff to develop an outreach plan, consistent with the Communications and Engagement Plan prepared during GSP development.

The DE Team will share an update on the Colusa Subbasin Outreach Plan development and proposed next steps.

Recommendation

1. Receive update and provide feedback as necessary.

Attachments

- None