



Groundwater  
Resources  
Association  
of California

GRA'S  
SECOND  
ANNUAL  
WESTERN  
GROUNDWATER  
CONGRESS

2019

**SHOOT FOR THE MOON!**

2019 WESTERN GROUNDWATER CONGRESS

DoubleTree Sacramento | September 17-19, 2019

## A HUGE THANK YOU TO OUR ALLUVIAL & ARTESIAN SPONSORS



**BLAINE  
TECH SERVICES**



## A HUGE THANK YOU TO ALL OUR SPONSORS!

### Alluvial Sponsors

Orange County Water District  
Woodard & Curran  
Roscoe Moss Manufacturing Company

### Watershed Sponsors

Brownstein Hyatt Farber Schreck, LLP  
Dudek & Associates, Inc.  
Larry Walker Associates  
Sonoma County Water Agency  
Water Replenishment District of Southern California  
Weather Modification International  
Water Systems Consulting, Inc

### Artesian Sponsors

Blaine Tech Services, Inc.  
INTERA Incorporated  
McCampbell Analytical, Inc.  
Qteq and Mount Sopris Instruments  
Ramboll  
SkyTEM

### Aquifer Sponsor

ASR Resources, LLC  
Cascade Drilling | Technical Services  
Confluence Environmental, Inc.  
DHI Water & Environment, Inc.  
Ellingson DTD  
GEI Consultants, Inc.  
GHD Inc.  
HydroGEOPHYSICS, Inc.  
Kleinfelder  
Maven's Notebook/CA Water Library/  
Groundwater Exchange  
Montgomery & Associates  
Pace National  
QED Environmental Systems, Inc.  
Ranch Systems, LLC - Novato, CA  
Redox Tech, LLC.  
REGENESIS  
Valley Water  
Vista Analytical Laboratory  
Vista Clara Inc  
Water Systems Consulting, Inc  
Pumpsight

### Recharge Sponsor

GeoSystems Analysis, Inc.  
Haley & Aldrich  
In-Situ Inc  
Provost & Pritchard Consulting Group  
Terraphase Engineering Inc.

### Sustainable Basin Sponsors

EKI Environment & Water, Inc.  
West Yost Associates

### Vadose Zone Sponsor

GSI Environmental, Inc.

### Conference Bag Swag Sponsors

Atkinson, Andelson, Loya, Ruud & Romo  
INTERA Incorporated  
GSI Environmental, Inc.  
Roscoe Moss Manufacturing Company





# Welcome!

Welcome to the 2nd Annual Western Groundwater Congress – We are back for another year of inspiration, learning and joy!

Welcome everyone! We are thrilled to have you join us at the 2nd Annual Western Groundwater Congress. This year's theme is Shoot for the Moon! We are celebrating the 50-year anniversary of the historic achievement of landing on the moon. Just as those courageous pioneers pushed the bounds of human ability into the unknown, we draw from the same courage and discipline as we strive to achieve GRA's vision: sustainable groundwater for all!

We would not be here without our flight team - the dedicated volunteers who have made this event possible. Our content Track Chairs piloted the development of the sessions, our Session Chairs manned the speaker coordination, our flight support crew developed the "fun" elements of the congress, and of course Ground Control orchestrated the entire rocket launch. It has been a great journey over the last twelve months, and we look forward to finding our new crew of volunteers who will bring GRA to Hollywood in 2020.

The WGC takes a team and funding just to get to the launch pad. We were overwhelmed this year by the early and powerful engagement of sponsors. We shot past our sponsorship goal by 40% and have several visionary water management agencies backing the Congress. Sponsors come from all areas of our industry: consulting firms, agencies, vendors, manufacturers, equipment suppliers, laboratories, and contractors. Without this network of supporters GRA would not be able to make its moonshot with the WGC this year. Thank you!

Whether you came to check out new innovations, get feedback on your work, expand your network, or put out some feelers for new job opportunities, the WGC event is a reminder that you're not flying solo in these fields. Hydrogeology draws from various disciplines to understand and solve the complexities of the unknown – it is nothing without collaboration from all branches of science and policy. Grow your team and get "well connected" at the WGC. Establish a new collaboration and hopefully a new friendship to bring your science into the next frontier.

The sense of intellectual community is powerful at the WGC and this is a great time to catch up with collaborators. Not only do we encourage use of the coffee breaks for networking time, we are facilitating deeper engagement with more unstructured time, and encouraging collaboration through conference mentors. We also suggest going to a few talks outside your "vadose zone" of expertise – often inspiration strikes where you are not looking for it.

GRA is dedicated to resource management that protects and improves groundwater supply and quality through education and technical leadership. Establish a sense of purpose for yourself here at the WGC. Remember the work you do improves people's lives, whether that is through shoring up water supplies from a supply or quality side, setting important policy, or teaching the next generation of groundwater leaders. Avoid trying to do too much and catch talks double time. Be present in the sessions you choose to attend. As your peers, we know this is an exceptionally busy time for groundwater professionals. We seek to create a culture at WGC that encourages our colleagues to decompress and prioritize self-care. Please take advantage of our stretch and meditation breaks, run it out at the early morning 5k Darcy Dash, unwind at casino night, social hours, or the water in the beer-making process workshop companion; and take time to connect with your colleagues by disconnecting from the pace of the work week for three days. It's easy to lose sight of what brought you to this industry and your sense of purpose in the groundwater world with the fast pace of your day-to-day work. Use the WGC to take a step back and reconnect with what brings you joy in this profession.

Thank you for spending three days with us in Sacramento to make your moonshot. We look forward to being inspired by you all while we are together!

-Christy Kennedy, WGC Chair



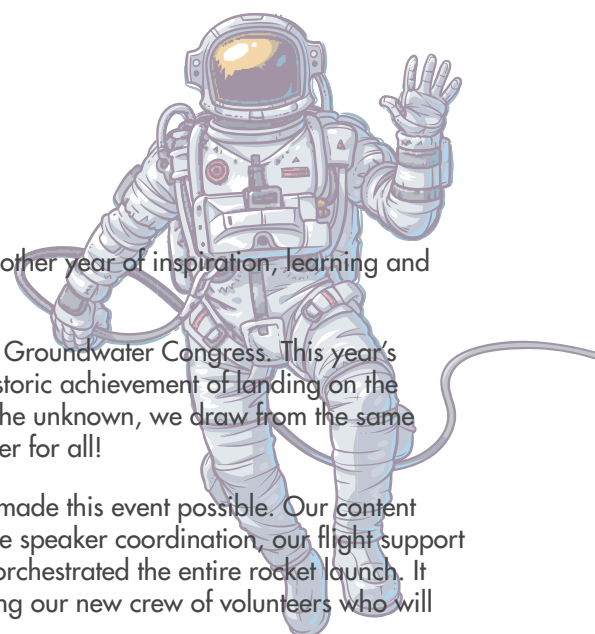
Special thanks to the following:

**Track Chairs:**

Leslie Dumas, Murray Einarson, Lisa Porta & Trevor Joseph

**Ground Control:**

R.T. Van Valer, Jim Strandberg, Lyndsey Bloxom, Sarah Erck



# TRAJECTORY AT A GLANCE

TUESDAY, SEPTEMBER 17, 2019		
7:00AM-3:00PM	REGISTRATION <i>(Grand Ballroom Foyer)</i>	
8:00AM-9:35AM	WELCOME & OPENING KEYNOTE SESSION <i>(Grand Ballroom)</i>	
9:35AM-9:55AM	BREAK - FEATURING THE 7-MINUTE WORKOUT <i>(Capitol Ballroom C&amp;D)</i>	
10:00AM-11:55AM	CONCURRENT SESSIONS	
TITLE	THE REST OF THE WILD WEST: STATEWIDE PERSPECTIVES ON GROUNDWATER MANAGEMENT	ALL THINGS DATA!
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	SITE ASSESSMENT & REMEDIATION	ONE WATER & NON-TRADITIONAL WATER SUPPLIES
ROOM	Sacramento Room	Terrace Room
12:00PM-1:30PM	NETWORKING LUNCH <i>(Grand Ballroom)</i>	
1:40PM-3:35PM	CONCURRENT SESSIONS	
TITLE	REINING IN THE HORSES: LOCAL APPROACHES AND CASE STUDIES	SGMA LEGAL ISSUES
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	EMERGING CONTAMINANTS	TOOLS & TECHNOLOGIES
ROOM	Sacramento Room	Terrace Room
3:35PM-4:00PM	BREAK & AFTERNOON MEDITATION <i>(Capitol Ballroom C&amp;D)</i>	
4:00PM-5:00PM	CONCURRENT SESSIONS	
TITLE	DAVID KEITH TODD LECTURERS	GSP PART DEUX - IMPLEMENTATION, A PANEL DISCUSSION
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	EMERGING CONTAMINANTS	
ROOM	Sacramento Room	
5:00PM-8:00PM	PRESIDENT'S RECEPTION AND CASINO NIGHT <i>(Grand Ballroom)</i>	
WEDNESDAY, SEPTEMBER 18, 2019		
6:30AM-7:30AM	DARCY DASH 5k <i>(Meet in Hotel Lobby at 6:20)</i>	
7:00AM-3:00PM	REGISTRATION <i>(Capitol Ballroom Foyer)</i>	
8:30AM-9:55PM	GRA AWARDS BREAKFAST, EMERITUS DIRECTOR INDUCTION & LEGISLATIVE UPDATE <i>(Capitol Ballroom)</i>	
9:55AM-10:25PM	BREAK - FEATURING THE 7-MINUTE WORKOUT <i>(Capitol Ballroom C&amp;D)</i>	
10:30AM-12:25PM	CONCURRENT SESSIONS	
TITLE	HOT TOPICS IN GROUNDWATER LAW	GROUNDWATER-SURFACE WATER INTERCONNECTION: QUANTIFYING STREAM DEPLETION
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	DATA MANAGEMENT AND VISUALIZATION	BIG DATA - INSTRUMENTATION TECH AND WATER
ROOM	Sacramento Room	Terrace Room
12:30PM-2:30AM	ANNUAL MEETING AND AWARDS LUNCHEON <i>(Grand Ballroom)</i>	
2:30PM-4:00PM	CONCURRENT WORKSHOPS	
TITLE	WATERING THE WEED	EXTREME MAKEOVER: GROUNDWATER PRESENTATIONS EDITION
ROOM	Capitol Ballroom A	Capitol Ballroom B
2:30PM-5:00PM	CONCURRENT WORKSHOP	
TITLE	SAMPLING AND ANALYSIS FOR PFAS COMPOUNDS	
ROOM	Sacramento Room	
4:00PM-6:00PM	WORKSHOP COMPANIONS	
TITLE	WGC POSTER SESSION IN THE EXHIBIT HALL	WATER IN THE BEER MAKING PROCESS (AND BEER TASTING!)
ROOM	Capitol Ballroom C/D	Capitol Ballroom Patio
5:00PM-7:00PM	Meet Your Branch Reception <i>(Grand Ballroom Patio)</i>	





# THURSDAY, SEPTEMBER 19, 2019

7:00AM-12:00PM	REGISTRATION <i>(Capitol Ballroom Foyer)</i>	
8:00AM-9:55AM	CONCURRENT SESSIONS	
TITLE	ACCESSING THE RESOURCE: REGULATION, TECHNOLOGY AND DESIGN OF WELLS	SGMA MONITORING NETWORKS & METERING
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	VAPOR INTRUSION	GROUNDWATER IN THE AGRICULTURAL SPACE
ROOM	Sacramento Room	Terrace Room
9:55AM-10:25AM	BREAK - FEATURING THE 7-MINUTE WORKOUT <i>(Capitol Ballroom C&amp;D)</i>	
10:30AM-12:25PM	CONCURRENT SESSIONS	
TITLE	REPLENISH OR PERISH - SURVIVING AND THRIVING IN THE ERA OF SGMA	SGMA MODELING - FOCUS ON CLIMATE CHANGE
ROOM	Capitol Ballroom A	Capitol Ballroom B
TITLE	CONTAMINANTS & ENVIRONMENTAL CLEANUP AND REAL ESTATE	SGMA PROJECTS & ACTIONS
ROOM	Sacramento Room	Terrace Room
12:30PM-2:45PM	LUNCH & 2020 DAVID KEITH TODD LECTURERS <i>(Grand Ballroom)</i>	
2:00PM-3:00PM	CONCURRENT SESSIONS	
3:00PM	CONFERENCE CONCLUDES	

## CHECK OUT GRA'S HYDROVISIONS IN ITS NEW FORMAT!



SCAN THIS TO CONNECT WITH INDUSTRY EXPERTS AND SEE THE INNER WORKINGS OF GRA!



# WGC2019 TRAJECTORY

## Tuesday, September 17, 2019

7:00-3:00PM | Registration & Conference Check-in

Grand Ballroom Foyer (upper level)

Stop by **"Ground Control"** at any time for staff assistance, directions and program materials.

7:00-8:00AM | Coffee & Continental Breakfast

Grand Ballroom (upper level)

8:00-9:35AM | **Welcome by Christy Kennedy, GRA Director and Western Groundwater Congress Chair and Opening Keynote Address by Melissa Marshall, Present Your Science**  
Grand Ballroom (upper level)



**Talk Nerdy to Me:** *Strategies for Successful Science Communication*

Have you ever tried to talk about a new technical project, only to be met with blank stares from your audience? Are you tired of the lifeless, text heavy, bulleted slides that make up most presentations? Did you ever have a slam dunk winner of a technical proposal go

in front of a public audience only to be rejected because they didn't "get it"? Join our keynote speaker at the Western Groundwater Congress, scientific presentations expert Melissa Marshall, to learn some practical strategies to immediately transform your technical presentations! Go from blank stares to buy in with your next talk.

9:35-9:55AM | **Break - Featuring the 7-minute workout in the Exhibit Hall**

Capitol Ballroom C&D (lower level)

10:00-11:55AM | **Concurrent Sessions**

**Track 1: Water Resources**  
Capitol Ballroom A (lower level)

**The Rest of the Wild West: Statewide Perspectives on Groundwater Management**

California has joined other western states in regulating groundwater resources; neighboring states have experimented with different forms of groundwater management over the past few decades. This session will focus on regional issues and the approaches agencies and stakeholders have taken to groundwater management in other western states, as well as what lessons can be gleaned for California as we progress into the SGMA era.

**Moderator:** Lisa Porta, Montgomery & Associates

- Rachel O'Connor, Environmental Defense Fund  
**A Comparison of Groundwater Occurrence and Management in the Colorado River Basin**
- Mark Cross, Montgomery & Associates  
**Managed Aquifer Recharge in Arizona - Experiences and Lessons Learned**

- Larry French, Texas Water Development Board  
**Texas Groundwater Management: Local Issues Meet Statewide Policies**
- Neil Blandford, Daniel B. Stephens & Associates, Inc.  
**New Mexico Groundwater: Recent Trends and Challenges**

**Track 2: SGMA**

Capitol Ballroom B (lower level)

**All Things Data!**

GSP development and implementation are heavily driven by data. This session will discuss some of the more difficult aspects of data collection and analysis, including evaluation of progress relative to sustainability criteria and integrating monitoring and management activities.

**Moderator:** Joe Hopkins, Provost & Pritchard Consulting Group

- Rob Gailey, R. M. Gailey Consulting Hydrogeologist PC  
**Well Impact Calculations for Sustainable Management Criteria under SGMA**
- Emily Tozzi, Formation Environmental  
**Integrated Monitoring and Management of Groundwater-Dependent Ecosystems**
- Tom R. Lauknes, NORCE Norwegian Research Centre  
**The Use of Ground Motion Data from InSAR to Explore and Manage the Groundwater Systems in California's Central Valley**
- Gavin O'Leary, Provost & Pritchard Consulting Group  
**Estimating Groundwater Storage Change Using GIS - Data Processing to Final Product**

**Track 3: Contaminants**

Sacramento Room (lower level)

**Site Assessment & Remediation**

Environmental site assessment and remediation is becoming more streamlined and efficient each year. New technologies for imaging the subsurface result in more effective and targeted remediation programs. New focus on better geologic conceptual models of the subsurface are leading to better groundwater models for both site cleanup and resource management.

**Moderator:** Murray Einarson, Haley & Aldrich

- Kathryn Dominic, California State Water Resources Control Board  
**Site Cleanup Subaccount Program - Improving Groundwater Through Grants**
- Rick Cramer, Burns & McDonnell  
**Advanced Geologic Analysis of Groundwater Basins in Pleasanton, CA**
- Brad Cross, ERM  
**Nuclear Magnetic Resonance (NMR) Geophysical Logging for High Resolution Site Characterization**
- Martin Hamann, RPS Group  
**The State Water Resources Control Board's Site Cleanup Subaccount Program (SCAP): A Consultant's Perspective**





# LARRY WALKER ASSOCIATES



LARRY  
WALKER



ASSOCIATES

40 YEARS  
1979-2019

## **Environmental engineering and consulting.**

Providing innovative water quality solutions throughout California for 40 years.

**Groundwater • Stormwater • Watershed Management  
Agricultural Water Quality Management • Wastewater**

**Davis 530.753.6400**

Berkeley, Carlsbad, San Jose, Santa Monica, Seattle, Ventura

[www.lwa.com](http://www.lwa.com)



## Track 4: Special Topics

Terrace Room (upper level)

### One Water & Non-traditional Water Supplies

There is a growing movement to break down the traditional water silos, such as flood control, wastewater treatment, water supply, and create a more integrated, holistic approach to water resources, sometimes called "One Water". In this session, we will hear from agencies that have broken down some of these silos and have integrated non-traditional water supplies, such as recycled water, brackish water and seawater into their supply portfolios. These agencies are leading the way in viewing water as one resource and turning non-traditional sources of supplies into staples of future supply portfolios.

**Moderator: Adam Hutchinson, Orange County Water District**

- Manisha Kothari, San Francisco Public Utilities Commission  
**OneWaterSF - A New Way of Thinking**
- Sandy Scott-Roberts, Orange County Water District  
**OCWD's Largest Groundwater Replenishment Source - GWRs Final Expansion Project**
- Lyndsey Bloxom, The Water Replenishment District of Southern California  
**WRD's Regional Approach to Brackish Water Reclamation in The West Coast Groundwater Basin**
- Jeremy Crutchfield, San Diego County Water Authority  
**San Diego's Diversified Water Supply Portfolio: Seawater Desalination**

### 12:00-1:30PM | Networking Lunch

Grand Ballroom (upper level)

**Students!** Did you sign up to join our Student/Professional Networking opportunity? It's not too late! See registration staff to add your name to the list!

Here's a great opportunity for **students and professionals** to network over lunch. Sit down at a table of other students and young professionals while teams of industry professionals stop by each table to meet and greet and provide their unique insights into the industry and what it takes to break into and advance as a groundwater professional!

1:40-3:35PM | **Concurrent Sessions**

### Track 1: Water Resources

Capitol Ballroom A (lower level)

#### Reining in the Horses: Local Approaches and Case Studies

A continuation of the western water theme, this session will provide local perspectives on groundwater management from neighboring western states. The focus will be on what California water managers and stakeholders can learn from challenges and solutions implemented in other western states. Speakers in this session will share valuable insights on what is and is not working in terms of projects and local solutions to groundwater management challenges.

**Moderator: Abhishek Singh, INTERA, Inc.**

- Margaret A Snyder, Tucson Water  
**Caring for Your Recharge Project Long Term: These Happy Golden Years**
- Scott Reinert, El Paso Water  
**Overview of the Kay Bailey Hutchison Desalination Plant**
- Shaden Musleh, INTERA, Inc.  
**An Overview of Groundwater Administration in an Over-appropriated Basin in Colorado: South Platte River Basin**
- Meghna Babbar-Sebens, Oregon State University  
**InterACTWEL: A New Decision Support Tool for Adaptation Planning in the Food, Energy and Water Sectors**

## Track 2: SGMA

Capitol Ballroom B (lower level)

### SGMA Legal Issues

This session will include presentations regarding pressing legal issues related to the implementation of the 2014 Sustainable Groundwater Management Act ("SGMA"), including an update from the California Department of Water Resources regarding its review of GSPs and GSP alternatives, the fee authority of Groundwater Sustainability Agencies, mechanisms for allocating groundwater production, and addressing groundwater dependent ecosystems

**Moderator: Jessica Diaz, Brownstein Hyatt Farber Schreck, LLP**

- Erick Soderlund, California Department of Water Resources  
**Sustainable Groundwater Management Program Update Regarding DWR Review of GSPs and GSP Alternatives**
- Mack Carlson, Brownstein Hyatt Farber Schreck  
**Fee Authority of Groundwater Sustainability Agencies**
- Eric Averett, Rosedale-Rio Bravo Water Storage District  
**Mechanisms for Groundwater Production Allocation**
- Sierra Ryan, County of Santa Cruz Health Services Agency  
**Surface Water Depletion and Groundwater Dependent Ecosystems**

### Track 3: Contaminants

Sacramento Room (lower level)

### Emerging Contaminants

The Emerging Contaminants sessions feature presentations from state regulators, consultants, scientists investigating and responding to the presence of emerging contaminants in the environment, in particular per- and polyfluoroalkyl substances (PFAS). Scientists from DTSC and the Water Board will present on California state actions related to PFAS and new approaches to investigating emerging contaminant chemical signatures will be discussed.

**Moderator: Erika Houtz, Arcadis**

- Dan Bryant, Woodard & Curran  
**Per- and Polyfluoroalkyl Substances (PFAS): ITRC's PFAS Team Progress and Latest Information**
- Shahla Farahnak and Scott Coffin, California State Water Resources Control Board  
**California Water Board's Actions on Per- and Polyfluoroalkyl Substances (PFAS)**
- Karla Buechler, Eurofins Environment Testing TestAmerica  
**Closing the PFAS Mass Balance in Sediments and Tissues: The TOP Assay**
- Kimberly Gettmann, CalEPA Department of Toxic Substances Control  
**PFAS: Regulatory Overview & What California is Doing**
- Randall Holmes, Environmental Defense Fund  
**Protecting Groundwater Quality from Geogenic and Emerging Contaminants**



## Track 4: Special Topics

Terrace Room (upper level)

### Tools & Technologies

Technological advances have allowed water resource management projects to be performed with the ability to quickly gather and analyze large datasets. This session will discuss the technological tools that are currently being used to efficiently perform basin-wide projects. These technologies include the use of aerial electrical magnetic geophysical systems to improve development of hydrogeological conceptual models; open-source Python programming tools used to manage, analyze and visualize large datasets; and the use of interferometric synthetic aperture radar to infer three-dimensional reservoir volume changes within the Tulare Basin.

**Moderator: Ryan Alward, Ramboll**

- Rosemary Knight, Stanford University  
**Update from the GAP (Groundwater Architecture Project): Advancing the Use of Airborne Electromagnetic Data for Groundwater Management**
- Noah Dewar, Stanford University  
**Estimating the Depth to the Saturated Zone from Airborne Electromagnetic Data**
- Don Vasco, Berkeley National Laboratory  
**Satellite-Based Monitoring of Groundwater Depletion in California's Central Valley**
- Michael J. Murphy, Terraphase Engineering, Inc.  
**Open-Source Python Tools for Environmental Data Processing, Analysis, and Visualization**

3:35-4:00PM | **Break and afternoon meditation in the Exhibit Hall**  
Capitol Ballroom C/D (lower level)

4:00-5:00PM | **Concurrent Sessions**

### Track 1: 2019 David Keith Todd Lecturers

Capitol Ballroom A (lower level)

Hear from GRA's 2019 David Keith Todd distinguished lecturers – Maurice Hall and David Sandino! Dr. Hall's distinguished career with water resources management focuses on environmental habitat, lending invaluable perspective to sustainable groundwater management practices. Attorney Sandino, who is former Chief Counsel of the California Department of Water Resources, provides unique insight from a state regulatory perspective for successful implementation of California's landmark legislation and relates rules under the Sustainable Groundwater Management Act (SGMA). For any Western Groundwater Congress attendees who previously heard either speaker earlier this year at a GRA Branch or university lecture, please attend – both speakers have a different "story" to tell that you will not want to miss.

**Moderator: Jenny Pensky, University of California, Santa Cruz**

- David Sandino, Esq., California Department of Water Resources
- Maurice Hall, Ph.D., Ecosystems-Water, Environmental Defense Fund

## Track 2: SGMA

Capitol Ballroom B (lower level)

### GSP Part Deux – Implementation, a Panel Discussion

With the submittal of the 2020 GSPs this January, the challenges of GSP implementation are up next. This panel discussion will focus on anticipated issues relating to GSP implementation, including ongoing coordination between basins, financing GSP implementation, improvements to technical analyses and balancing groundwater sustainability with economic impacts.

**Moderator: Leslie Dumas, Woodard & Curran**

- Emmett Campbell, Mojave Water Agency
- Andrew Garcia, Central Delta-Mendota Region Multi-Agency GSA
- Jarrett Martin, Central California Irrigation District
- Andy Rodgers, Santa Rosa Plain GSA
- Briana Seapy, California Department of Fish and Wildlife
- Kathleen Stone, Jacobs Engineering

### Track 3: Contaminants

Sacramento Room (lower level)

### Emerging Contaminants

The Emerging Contaminants sessions feature presentations from state regulators, consultants, and scientists investigating and responding to the presence of emerging contaminants in the environment, in particular per- and polyfluoroalkyl substances (PFAS). Scientists from DTSC and Water Board will present on California state actions related to PFAS and new approaches to investigating emerging contaminant chemical signatures will be discussed.

**Moderator: Erika Houtz, Arcadis**

- Erika Houtz, Arcadis  
**Forensic Tools for Assessing PFAS Sources**
- Peter Zawislanski, Terraphase Engineering Inc.  
**New Screening Levels for Petroleum Metabolites in Groundwater: Implications for Fuel Release Sites**

5:00-8:00PM | **President's Reception**

Grand Ballroom (upper level)

Houston, we have ENTERTAINMENT! Got the right stuff? Try your luck at Blackjack, Craps, and Roulette. Use your WGC bucks to play games or trade them in for additional raffle tickets!



# Wednesday, September 18, 2019

## 7:00-3:00PM | Registration

Grand Ballroom Foyer (upper level)

Stop by "Ground Control" at any time for staff assistance, directions and program materials.

## 6:30-7:30AM | Darcy Dash 5k

Dust off your running shoes and join us for the Darcy Dash 5k!

Runners/walkers please meet in the hotel lobby by 6:20AM

## 8:30-9:55AM | GRA Awards Breakfast, Emeritus Director Induction & Legislative Update

Grand Ballroom (upper level)

The Emeritus Director designation is conferred upon former Directors who have performed substantial, consistent and recognizable service to GRA during their terms. GRA will be honoring five former Directors and their contributions during this session.

GRA Director Brad Herrema, a water rights attorney, will provide an update regarding groundwater related legislation pending during the present legislative session. Brad will describe GRA's legislative advocacy efforts during the present legislative session and highlight and summarize legislation affecting groundwater rights and quality.

## 9:55-10:25 | Break - Featuring the 7-minute workout in Exhibit Hall

Capitol Ballroom C&D (lower level)

## 10:30-12:25PM | Concurrent Sessions

### Track 1: Water Resources

Capitol Ballroom A (lower level)

#### Hot Topics in Groundwater Law

This session will include presentations regarding hot topics in California groundwater law, including a case study regarding the Pajaro Valley groundwater recharge pilot project, PFAs, PFOs and other current groundwater quality concerns, legal issues in adjudicated groundwater basins, and the ongoing dialogue regarding whether the State should consider groundwater recharge to be a beneficial use of water.

*Moderator: Brad Herrema, Brownstein Hyatt Farber Schreck, LLP*

- Michael Kiparsky, Wheeler Water Institute, Center for Law, Energy & the Environment  
**Pajaro Valley Groundwater Recharge Pilot Project Case Study**
- Ken Sansone, SL Environmental Law Group  
**PFAs, PFOs and Other Groundwater Quality Concerns**
- Derek Hoffman, Gresham Savage  
**Legal Issues in Adjudicated Groundwater Basins**
- Ryan Bezerra, Bartkiewicz, Kronick & Shanahan  
**Recharge of Groundwater as a Beneficial Use**

### Track 2: SGMA

Capitol Ballroom B (lower level)

#### Groundwater-Surface Water Interconnection: Quantifying Stream Depletion

This session will address the quantification of stream depletion caused by groundwater pumping in interconnected groundwater-surface water systems. Presentations will discuss the use of and limitation of models and other methods in addressing this sustainability criteria.

*Moderator: Linda Bond, California Department of Water Resources*

- Gilbert Barth, Ph.D., S. S. Papadopoulos and Associates, Inc.  
**Understanding and Conveying Groundwater's Role in a Changing World**
- Douglas Tolley, University of California Davis  
**Integrated Hydrologic Model Evaluation for Non-Modelers**

- Kip K. Allander, US Geological Survey; Nevada Water Science Center  
**Limitations of the Basin Yield Approach to Groundwater Resource Management**
- Jeffrey Sanchez, California State Water Resources Control Board  
**Evaluating Stream Depletions in Small Watersheds and Headwaters of California - stream Depletion Risk Assessment Framework & Tools**

### Track 3: Contaminants

Sacramento Room (lower level)

#### Data Management and Visualization

With the proliferation of sensors and processors that image the environment from depths thousands of feet below -- to miles above -- the ground surface, management and visualization of environmental data is becoming a fundamental component of water resources and environmental assessment and remediation projects. New technologies and approaches are providing unprecedented understanding and visualization of the subsurface environment.

*Moderator: Mike Milczarek, GeoSystems Analysis, Inc.*

- Michael J. Messina, Terraphase Engineering  
**Data Management Technology for Lead in School Drinking Water**
- Sanford (Sandy) Britt, QED Environmental Systems, Inc.  
**An Equipment Manufacturer's Perspective on Regulatory Guidance and Ambiguity**
- Bryant Jurgens, US Geological Survey  
**Identifying Areas of Degrading and Improving Groundwater-Quality Conditions in the State of California, 1974-2014**
- Dariush Mobini, Haley & Aldrich  
**The Rise of Data Dashboards – Make Your Data Available for Analysis on Demand**

### Track 4: Special Topics

Terrace Room (upper level)

#### Big Data - Instrumentation Tech and Water

This session will focus on how big data and technology can be used to build trust, level the playing field, and enable more efficient and sustainable water management decision-making at larger scales than previously possible.

*Moderator: Robyn Grimm, Environmental Defense Fund*

- Hiroko Mori, GSI Environmental Inc  
**Application of Network Analysis for Ecohydrology**
- Heather Dodson, Texas Water Development Board  
**Groundwater Data Collection and Dissemination in Texas**
- Justin Huntington, Desert Research Institute  
**OpenET: Filling the Biggest Gap in Water Data for the Western U.S.**
- Jim Schneider, Olsson  
**Leveraging Technology to Turn Groundwater Managers into Groundwater Modelers**





**12:30-2:30 PM Annual Meeting and Awards Luncheon**

Grand Ballroom (upper level)

GRA's Awards Program is to recognize noteworthy projects and unique individual contributions related to the education, protection, and management of groundwater in California.

**2:30-4:00 PM | Concurrent Workshops**

**Watering the Weed**

Capitol Ballroom A (lower level)

Cannabis production has increased dramatically since the passage of Prop 64 in 2016, and California's permitted cannabis operations are on track to produce up to nine million tons of crop this year. From cannabis fields in Humboldt to state-of-the-art indoor facilities in the heart of the desert, cannabis operations are popping up like a weed, bringing with them demand for land, energy, and—you guessed it—water.

**Workshop Moderators:**

- Kiernan Brtalik, Rincon Consultants
- John Sisser, Rincon Consultants
- Brooke Wangsgard, Brownstein Hyatt Farber Schreck
- Daniel Schultz, State Water Resources Control Board

**Extreme Makeover: Groundwater Presentations Edition**

Capitol Ballroom B (lower level)

Do you have an exciting (or not so exciting) story to tell? Do you use the same presentation slides time and time again? We all know the water industry is acronym and data-heavy, but your presentations can still be accessible and memorable to everyone! This workshop will focus on easy and implementable tips and tricks to help you better understand your audience, maximize your communication assets, adapt your presentation, and revitalize your slides and delivery. Through interactive and hands-on activities, you will learn how to revamp your public speaking and communications skills and make your technical presentations digestible and relevant to any audience. Our expert workshop instructors will bring applied communications experience that is specific to the water industry and tried and tested by groundwater professionals at public agencies and private firms.

**Workshop Instructors:**

- Samantha Salvia, Woodard & Curran
- Lyndsey Bloxom, WRD Water Resources Senior Analyst
- Jenn Swart, WRD Communications & Education Services Representative

**2:30-5:00 PM | Workshop**

**Sampling and Analysis for PFAS Compounds**

Sacramento Room (lower level)

Expert instructors in this workshop will provide much needed clarity and direction on your PFAS sampling and analytical programs. They will share the latest PFAS sampling guidance documents -- including the SWRCB's new California PFAS Sampling Guide -- and discuss the current "best practices" for sampling and analyzing environmental media for PFAS. Several case studies will be shared, illustrating practical methods to identify "false positives" and other biases in PFAS data sets, which is critical to forensic analysis of PFAS sources and attenuation evaluations.

**Workshop Instructors:**

- Jason Brown, Confluence Environmental
- Karla Buechler, Eurofins Environment Testing TestAmerica
- Erika Houtz, PhD, Arcadis
- David Kaminski, QED Environmental Systems
- Francis Thie, Blaine Tech Services



**SUSTAINABLE  
WATER  
MANAGEMENT  
(FROM THE  
GROUND UP)**

See how we do it at [ramboll.com/water](http://ramboll.com/water)

PROUD SPONSOR OF GRA'S WESTERN GROUNDWATER CONGRESS

...Delivering Solutions for

# Sustainable Groundwater Management

- SGMA technical and planning support
- Integrated water resources planning
- Water supply development
- Groundwater availability assessments
- Groundwater and surface water modeling to evaluate:
  - safe yield
  - aquifer storage and recovery
  - saltwater intrusion and barriers
  - conjunctive use
  - recycled water recharge
- Aquifer characterization
- Drought and climate change evaluations
- Uncertainty and resilience evaluations
- Permitting and regulatory support

**Contact one of our California water resource experts:**

**David Jordan, PE**  
 djordan@intera.com  
 505. 246. 3849

**Abhishek Singh, PhD, PE**  
 asingh@intera.com  
 424. 275. 0555

intera.com

**4:00-6:00 PM | Water in the Beer Making Process (and Beer Tasting!)**

Capitol Ballroom Patio - Outside, through the Exhibit Hall!  
 To all beer lovers: Come meet local Sacramento Region brewers and taste their finely crafted and unique beers; you will learn about Sacramento's own micro brewing business and have the opportunity to ask questions about beer brewing on the moon! Grab a beer and wander through the exhibit hall, check out the poster session and network with regional branch leadership!

**4:00-6:00 PM | WGC Poster Session in the Exhibit Hall**

Capitol Ballroom C/D (lower level)  
 Here's a hypothesis: You can learn as much from a 5-minute conversation with a colleague in front of a well-designed poster as you can at a full-length presentation. Help test this by visiting the poster exhibit, which is full of exciting research, innovative projects, and passionate groundwater professionals with big ideas!

**5:00-7:00 PM | Meet Your Branch Reception**

Capitol Ballroom Patio - Outside, through the Exhibit Hall!  
 Make sure you're wearing your "Mission Patch" and stroll through the reception to meet branch leaders and other branch members!



## Thursday, September 19, 2019

**7:00AM-12:00PM | Registration**

Grand Ballroom Foyer (upper level)  
 Stop by "Ground Control" at any time for staff assistance, directions and program materials.

**7:00- 8:00AM | Coffee & Continental Breakfast in the Exhibit Hall**  
 Capitol Ballroom C/D (lower level)

**8:00-9:55AM | Concurrent Sessions**

**Track 1: Water Resources**

Capitol Ballroom A (lower level)

**Accessing the Resource: Regulation, Technology and Design of Wells**

Groundwater is only a water resource if you can get it out of the ground, and the ground available for well installation is ever decreasing. Wells today are designed to last longer than a professional's career and are a significant long-term investment for the owner. This session begins with an update to the California standards regarding wells, then walks through some innovations in the siting, design, and long-term management of the well asset.

**Moderator: Bill DeBoer, Jacobs Engineering**

- Julie Haas, California Department of Water Resources  
**Improving Groundwater Protection in California through Updated Well Standards**
- Logan Wicks, GEOSCIENCE Support Services, Inc.  
**Planning Future Well Projects to Meet Water Needs Using Groundwater Models: A Case Study How Groundwater Modeling Helped Locate and Design Injection Wells for an**



### Indirect Potable Reuse Water Supply Project

- Geno Mammini, Clear Creek Associates  
**Nitrate Reduction Through Well Design in Queen Creek, Arizona**
- Gavin Devries, San Jose Water and Michael Bombard, GHD, Inc  
**Groundwater Well Asset Management Planning: San Jose Water's Plan for Efficient, Cost-Effective and Sustainable Use of Groundwater Assets to Meet Future Needs**

### Track 2: SGMA

Capitol Ballroom B (lower level)

#### SGMA Monitoring Networks & Metering

Data collection is going to be a big part of GSP implementation. Presenters in this session will talk about methods for tracking private groundwater extractions, optimizing data collection and using this information in water budgets.

*Moderator: Rob Schuman, Kleinfelder*

- Kyle Tracy, Woodard & Curran  
**Leveraging Existing Technology and Expertise to Track Private Well Groundwater Extraction**
- Rick Iger, Provost & Pritchard Consulting Group  
**Wetlands & Water Budgets**
- Farid Achour, GSI Environmental Inc.  
**Optimizing Sampling Frequency Using Transducers within Groundwater Monitoring Wells to Comply with the Sustainable Groundwater Management Act (SGMA)**
- Joseph Fillingham, WellIntel  
**Stakeholder Well Monitoring Networks in Overdraft Basins to Facilitate Sustainable Management**

### Track 3: Contaminants

Sacramento Room (lower level)

#### Vapor Intrusion

CalEPA has been reassessing their approach for evaluating the vapor intrusion pathway (VI) throughout California, incorporating recommendations from the USEPA 2015 VI Guidance. Because of this, VI practitioners and PRPs in California have been facing recent challenges of guidance documents in flux and varying opinions by state regulators, which can make it challenging to make progress and to close out sites, especially where future buildings are planned. Please join this session which will provide updates on approaches to VI mitigation, as well as challenges and successes to date.

*Moderator: Gina Plantz, Haley & Aldrich*

- Cheryl Prowell, Regional Water Quality Control Board  
**San Francisco RWQCB's VI Mitigation Advisory Guidance**
- Tom Hatton, Clear Vapor, LLC and Richard Rago, Haley & Aldrich  
**Demonstrating Performance in Vapor Intrusion Migration Systems**
- Lisa J. Campe, Woodard & Curran  
**In Flux & A Case Study of a Vapor Intrusion Site that Transitioned from Active to Passive Sub Slab Depressurization Systems (SSDS)**

### Track 4: Special Topics

Terrace Room (upper level)

#### Groundwater in the Agricultural Space

While agriculture is a significant part of groundwater management, many aspects of agriculture's role in this system are not well understood. This session includes speakers working to improve our understanding of key facets of the agricultural groundwater system.

*Moderator: Jack Rice, Western Resource Strategies, LLC*

- Nick Osman, The Freshwater Trust  
**BasinScout: Groundwater Sustainability Decision Support Tool for Integrating Agricultural Management Practices and Costs under SGMA**
- Hanna Ouaknin, University of California, Davis  
**Irrigation and Nitrogen Management and Monitoring to Improve Almond Production While Minimizing Groundwater Nitrate**
- Francisco Flores-Lopez, California Department of Water Resources, Statewide Infrastructure Investigation Branch  
**Manage Aquifer Recharge Using Floodwaters on Agricultural Fields**
- Christopher Heppner, EKI Environment & Water, Inc.  
**Comparison of Methods to Estimate the Water Budget of Agricultural Lands**

9:55-10:25 | Break - Featuring the 7-minute workout in the Exhibit Hall  
Capitol Ballroom C&D (lower level)

10:30AM-12:25PM | Concurrent Sessions

### Track 1: Water Resources

Capitol Ballroom A (lower level)

#### Replenish or Perish – Surviving and Thriving in the Era of SGMA

The need for increased water storage in California was evident during our recent multi-year drought. Increasing recharge and exercising aquifer storage holds great promise in quenching our ever-increasing thirst, addressing the challenges of achieving sustainable groundwater management by 2040, mitigating for an uncertain climate future, and providing for water dependent ecosystems. This session highlights programs in Orange and Yolo Counties that have overcome these challenges, features innovative recharge tools being developed at Stanford and novel recharge strategies applied in Roseville.

*Moderator: Chris Petersen, GEI Consultants*

- Karissa Pepin, Stanford University – Department of Geophysics  
**Utilizing Geophysical Imaging to Assess Sites for Managed Aquifer Recharge**
- Ricardo Medina, Orange County Water District  
**Targeting Clogged Areas for Cleaning Through Better Data: Improving Groundwater Recharge Basin Management**
- Kristin Sicke, Yolo County Flood Control & Water Conservation District - Utilizing Excess Winter Stormwater Flows for Groundwater Recharge
- Chris Petersen and Trevor Kent, GEI  
**Conjunctive use through Aquifer Storage and Recovery - Providing Local Water Supply Reliability and Maintaining Sustainable Management of Groundwater**





## Track 2: SGMA

Capitol Ballroom B (lower level)

### SGMA Modeling - Focus on Climate Change

The Emergency GSP Regulations required the use of Climate Change Factors or an alternative methodology in development of the GSP Water Budgets in order to account for anticipated future climate change impacts on the State's water supplies. This session will focus on the consideration of climate change in groundwater modeling and implications of those modeling results on planning efforts.

**Moderator:** *Can Dogrul, California Department of Water Resources*

- Cameron Tana, Montgomery & Associates  
**Evaluating Climate Change Scenarios for Groundwater Sustainability Plans to Address Local Considerations**
- Dominick Amador, Woodard & Curran  
**Conducting Climate Change Evaluations for Groundwater Sustainability Plans Maximizing the Value of Available Information and Tools**
- Sercan Ceyhan, Hydrologic Research Laboratory, University of California, Davis  
**Projected 21st Century Trends in the Groundwater Stresses of a Northern California Aquifer Based on an Ensemble of Dynamically Downscaled Future Climate Projections and an Integrated Hydrological Modeling Framework**
- Nathan Van Schmidt, University of California, Santa Cruz  
**Modeling the Coupled Impacts of Climate and Land-Use Change on Groundwater Sustainability for Vulnerable Social and Ecological Coastal Communities**

## Track 3: Contaminants

Sacramento Room (lower level)

### Contaminants & Environmental Cleanup and Real Estate

The California economy has been booming, resulting in unprecedented pressure to construct new office space, industrial buildings, and housing in highly competitive real estate markets. Affordable housing is needed near employment centers in the San Francisco Bay Area and Southern California, and their development has unique challenges. Much of the new construction is occurring on environmentally impacted properties in urban industrial areas. Awareness of environmental issues during redevelopment and concerns about potential exposure to residual hazardous substances have never been higher, resulting in innovative and balanced approaches to ensure that occupants of the newly constructed properties and the nearby community are protected from exposure to environmental contaminants. Statewide and local environmental regulators recognize the need to assist in streamlining the process for redevelopment of former industrial properties for housing and continue to work with the redevelopment community to move these projects to completion while also fulfilling their mission of long-term protection of the public and environment.

In this session, institutional, engineering, legal, and regulatory professionals will discuss issues relevant to the development of affordable housing. Following the four talks, the speakers will participate in a panel to explore issues and solutions for affordable housing redevelopment.

**Moderator:** *Timothy Wood, GSI Environmental Inc.*

- John Van Vlear, Newmeyer & Dillion and Peter Garcia, DTSC  
**How Environmental Lawyers Marshal Technical Data and Site Realities to Move Affordable Housing Projects with Hazardous Substance Impacts and Occupancy**
- Steven Armann, US EPA Region 9  
**Addressing PCB Contamination at Redevelopment Sites**

- Melissa Schuetz, Terraphase Engineering, Inc.  
**Transforming an Oil Field Waste Disposal Facility into Residences and Habitat - North Shore at Mandalay Bay**
- Annette Walton, Stanford University and Susan Gallardo, GSI Environmental Inc.  
**Development of Faculty Housing: The Environmental Challenges of Building Residences in the Stanford Research Park**

## Track 4: Special Topics

Terrace Room (upper level)

### SGMA Projects & Actions

In this session we will hear how local agencies are developing projects and management actions to address the challenges and opportunities presented by the SGMA. Speakers will cover their experience working on new and existing groundwater management actions in basins with diverse hydrologic and stakeholder conditions.

**Moderator:** *Trevor Joseph, City of Roseville*

- Rob Swartz, Regional Water Authority  
**Expanding Conjunctive Use through Establishment of the Sacramento Regional Water Bank**
- Sarah Heard, The Nature Conservancy  
**SGMA's First Groundwater Market: A Case Study of Fox Canyon**
- John Lindquist, United Water Conservation District  
**Not Thrilled About Asking Your Customers for an Additional \$500 Million to Maintain Their Existing Water Supply? An Example of the Benefits of Thoroughly Evaluating Future Water Demand under SGMA and Ranking Water-Supply Projects to Optimize Cost Efficiency**
- Brian Lockwood, Pajaro Valley Water Management Agency  
**Water Resources Management in the Pajaro Valley**

12:30-2:45PM | **Lunch & 2020 David Keith Todd Lecturers**  
Grand Ballroom (upper level)

The Groundwater Resources Association of California (GRA) created the David Keith Todd Distinguished Lecture Series to honor Dr. David Keith Todd (GRA 1999 Lifetime Achievement Award recipient) for his enormous contributions to groundwater science and technology, and to foster interest and excellence in applied groundwater science and technology. Annually, the lectureship is awarded to qualified individuals who personify Dr. Todd's lifelong dedication to groundwater resources. This session will be the first time a GRA audience hears from our 2020 lecturers – you don't want to miss out!

**Moderator:** *Wes Miliband, Atkinson, Andelson, Loya, Ruud & Romo*

- Graham Fogg, Professor of Hydrogeology and Hydrogeologist, Department of Land, Air and Water Resources - UC Davis
- Tess Dunham, Shareholder, Somach Simmons & Dunn Attorneys at Law

2:45-3:00PM | **Closing Remarks**

by Christy Kennedy, GRA Director and Western Groundwater Congress Chair



## 2019 WGC SPONSORS & EXHIBITORS



Orange County Water District  
Ricardo Medina, Postdoctoral Research Associate  
rmedina@ocwd.com 714-378-3303  
18700 Ward Street  
Fountain Valley, CA 92708 USA



Woodard & Curran  
Leslie Dumas, Senior Technical Leader  
ldumas@woodardcurran.com 916-999-8778  
1545 River Park Dr., Suite 425  
Sacramento, CA 95815 USA



Roscoe Moss Manufacturing Company  
R.T. Van Valer, Division Manager  
rtvanvaler@roscoemoss.com 323-263-4111  
4360 Worth Street  
Los Angeles, CA 90063 USA



Brownstein Hyatt Farber Schreck, LLP  
Brad Herrema, Shareholder  
bherrema@bhfs.com 310-500-4609  
2049 Century Park East, Suite 3550  
Los Angeles, CA 90067 USA



Dudek & Associates, Inc.  
Trey Driscoll, Principal Hydrogeologist  
tdriscoll@dudek.com 760-415-1425  
605 Third Street  
Encinitas, CA 92024 USA



Larry Walker Associates (upgraded to full page ad)  
Katrina Arredondo, Hydrogeologist  
KatrinaA@lwa.com 530-902-0563  
3435 Koso St.  
Davis, CA 95618 USA



Sonoma County Water Agency  
Ann DuBay, Community & Government Affairs  
Manager  
Ann.DuBay@scwa.ca.gov 707-524-8378  
404 Aviation Blvd  
Santa Rosa, CA 95403 USA



Water Replenishment District of Southern California  
Kimberly Badescu, Public Affairs Representative  
kbadescu@wrdd.org 562-275-4264  
4040 Paramount Blvd  
Lakewood, California 90712 USA



Weather Modification International  
Danielle Holland, Executive Admin Assistant  
dholland@weathermod.com 763-439-7819  
3802 20th Street North  
Fargo, MN 58102 USA



Water Systems Consulting, Inc  
Michael Cruikshank, Hydrogeologist  
jwhite@wsc-inc.com 805-457-8833  
805 Aerovista Pl  
San Luis Obispo, CA 93403 USA



Blaine Tech Services, Inc.  
Fran Thie, Vice President  
fthie@blainetech.com 408-639-2985  
1680 Rogers Avenue  
San Jose, CA 95112 USA

# BLAINE TECH SERVICES

Groundwater Monitoring  
Soil Vapor Sampling  
Soil Sampling  
Remediation Support  
Pump & Aquifer Tests  
System O&M  
Well Development  
Wellhead Maintenance



blainetech.com





INTERA Incorporated  
Abhishek Singh, Manager - California Operations,  
Senior Water Resources Engineer  
asingh@intera.com 424-275-0555  
3838 W. Carson Street, #380  
torrance, CA 0503 USA



McC Campbell Analytical, Inc.  
Rosa Venegas, Sales / Marketing Director  
rosa@mccampbell.com 925-252-9262  
1534 Willow Pass Road  
Pittsburg, CA 94565 USA



Qteq and Mount Sopris Instruments  
David Huffington, Business Development Manager  
mdonaldson@qteq.com.au 510-684-0592  
4975 E 41st Ave  
Denver, Colorado 80216 USA



Ramboll  
Ryan Alward, Senior Hydrogeologist  
ralward@ramboll.com 916-793-7744  
1201 K Street  
Sacramento, CA 95814 USA



SkyTEM  
Bill Brown, Regional Manager  
bb@skytem.com 519-502-1436  
62 Hall St  
Ayr, Ontario N0B1E0 Canada



ASR Resources, LLC  
Robert Tribble, Manager  
rob@asrresources.com 702-525-0250  
7345 S Durango Dr STE B107-176  
Las Vegas, NV 89113 USA



Cascade Drilling | Technical Services  
Eric Sandberg, Vice President  
Esandberg@cascade-env.com 415-786-7244  
120 S 23rd St  
Richmond, WA 94804 USA



Confluence Environmental, Inc.  
Megan Kerns, President  
mkerns@confluenceenvironmental.com 530-401-8609  
6821 8th Street  
Rio Linda, CA 95673 USA



DHI Water & Environment, Inc.  
Josh Mendes, Technical Sales Associate  
jme@dhigroup.com 323-828-2030  
141 Union Blvd #250  
Lakewood, CO 80228 USA



Ellingson DTD  
Jacob Gallagher, Business Development Manager  
jacob@horizontaldrill.com 510-334-6455  
56113 State Highway 56  
West Concord, MN 55985 USA



GEI Consultants, Inc.  
Chris Petersen, Principal Hydrogeologist  
cpetersen@geiconsultants.com 916-631-4500  
2868 Prospect Park Drive, Suite 400  
Rancho Cordova, California 95670 USA



GHD Inc.  
David Vossler, Senior Hydrogeologist  
Dave.Vossler@ghd.com 707-540-9954  
2235 Mercury Way, Ste 150  
Santa Rosa, CA 95407 USA



HydroGEOPHYSICS, Inc.  
Nigel Crook, Senior Geophysicist  
ncrook@hgiworld.com 206-669-3730  
5020 Campus Drive  
Newport Beach, California 92660 USA



Kleinfelder  
Joe Zilles, Sr. Principal Hydrogeologist  
jzilles@kleinfelder.com 916-366-1701  
2882 Prospect Park, Suite 200  
Rancho Cordova, CA 95670 USA



Maven's Notebook/CA Water Library/Groundwater Exchange  
Chris Austin  
chrisellyn@earthlink.net 661-299-2448  
20055 Dorothy Street  
Canyon Country, CA 91351 USA



Montgomery & Associates  
Timothy Leo, Principal Hydrogeologist  
tleo@elmontgomery.com 520-881-4912  
1550 E. Prince Road  
Tucson, AZ 85719 USA



Pace National  
Vincent Vancil, Sales Manager  
vvancil@pacenational.com 925-204-9555  
12065 Lebanon Road  
Mount Juliet, TN 37122 USA



QED Environmental Systems, Inc.  
David Kaminski, Senior VP  
dkaminski@qedenv.com 925-437-2885  
118 Shepard St.  
Hercules, CA 94547 USA



Ranch Systems, LLC - Novato, CA  
Hylon Kaufmann, Director of Business Development  
hylon@ranchsystems.com 415-233-4663  
37 Commercial Blvd Ste 101  
Novato, CA 94949 USA



Redox Tech, LLC.  
Steve Chen, Western Manager  
chen@redox-tech.com 415-689-0033  
100 Corporate Pl, Suite A  
Vallejo, CA 94590 USA



REGENESIS  
Daniel Nunez, Southwest District Manager  
dnunez@regenesisc.com 949-910-1977  
15314 La Barca Drive  
La Mirada, CA 90638 USA



Valley Water  
Vanessa de la Piedra, Groundwater Management Unit Manager  
vdelapiedra@valleywater.org 408-630-2788  
5750 Almaden Expressway  
San Jose, CA 95118 USA







Vista Analytical Laboratory  
Jennifer Miller, National Sales  
jmiller@vista-analytical.com 9169955171  
1104 Windfield Way, EL DORADO HLS, 95762



Vista Clara Inc  
Ahmad Behroozmand, Senior Geophysicist  
Ahmad@vista-clara.com 415-430-7173  
12201 Cyrus Way, Ste 104  
Mukilteo, Washington 98275 USA



Water Systems Consulting, Inc  
Erik Cadaret, Hydrogeologist  
jwhite@wsc-inc.com 805-457-8833  
805 Aerovista Pl  
San Luis Obispo, CA 93403 USA



**Pumpsight**

Morgan Halpenny, CEO  
morgan.halpenny@pumpsight.com 650-387-1797  
657 E Pintail Cir  
Fresno, CA 93730 USA



GeoSystems Analysis, Inc.  
Jim McCord, Principal Hydrogeologist  
jtmccord@gsanalysis.com 805-560-8125  
718 De La Vina Street  
Santa Barbara, CA 93101 USA



Haley & Aldrich  
Murray Einarson, Principal Hydrogeologist  
meinaron@haleyaldrich.com 650-400-0248  
1956 Webster St #300  
Oakland, CA 94612 USA



In-Situ Inc  
Bill Mann, Sales Manager  
bmann@in-situ.com 360-809-3554  
221 E. Lincoln Ave  
Ft Collins, CO 80524 USA



Provost & Pritchard Consulting Group  
Joe Hopkins, PE, Senior Engineer  
sgonzales@ppeng.com 559-449-2700  
286 W Cromwell Avenue  
Fresno, CA 93711 USA



Terraphase Engineering Inc.  
Peter Zawislanski, Principal Hydrogeologist  
peter.zawislanski@terraphase.com 510-645-1858  
1404 Franklin St., Suite 600  
Oakland, California 94612 USA



EKI Environment & Water, Inc.  
Anona Dutton, Vice President/Director of Water Resources  
adutton@ekiconsult.com 650-292-9100  
577 Airport Blvd., Suite 500  
Burlingame, CA 94010 USA



West Yost Associates  
Abigail Madrone, Business Development Director  
amadrone@westyost.com 530-759-5905  
8950 Cal Center Drive, Suite 363  
Sacramento, CA 95826 USA



GSI Environmental, Inc.  
Timothy Wood, Principal Geologist  
ifwood@gsi-net.com 949-679-1070  
19200 Von Karman Avenue, Suite 800  
Irvine, CA 92612 USA



# McCampbell Analytical Inc.

*When Quality Counts*

877-252-9262

www.mccampbell.com

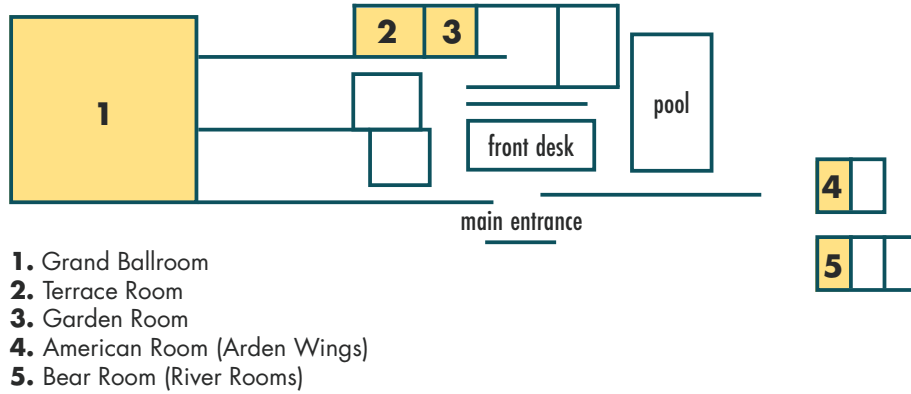
**NPDES**  
**Microbiological**  
**Aquatic Toxicity**  
**Drinking Water**  
**Stormwater**  
**Wastewater**  
**Dioxins - PCB Congeners**

**R & D**  
**Air Quality**  
**Hazardous Waste**  
**Soil & Sediment**  
**Agricultural Materials**  
**Industrial Materials**  
**XRD - XRF - FTIR**

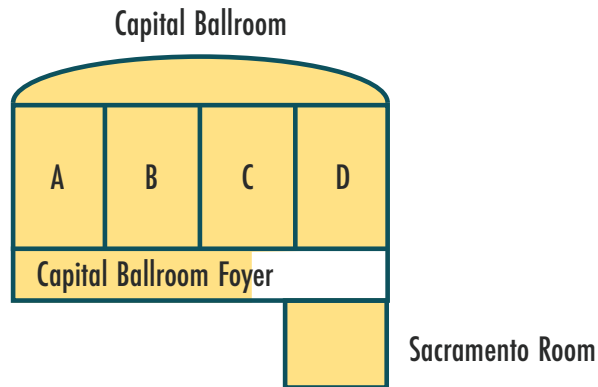
ELAP 1644 - NELAP 4033  
Since 1991

# NAVIGATION

## DOUBLETREE HOTEL SACRAMENTO - MAIN LEVEL



## DOUBLETREE HOTEL SACRAMENTO - LOWER LEVEL



 - GRA SPACE

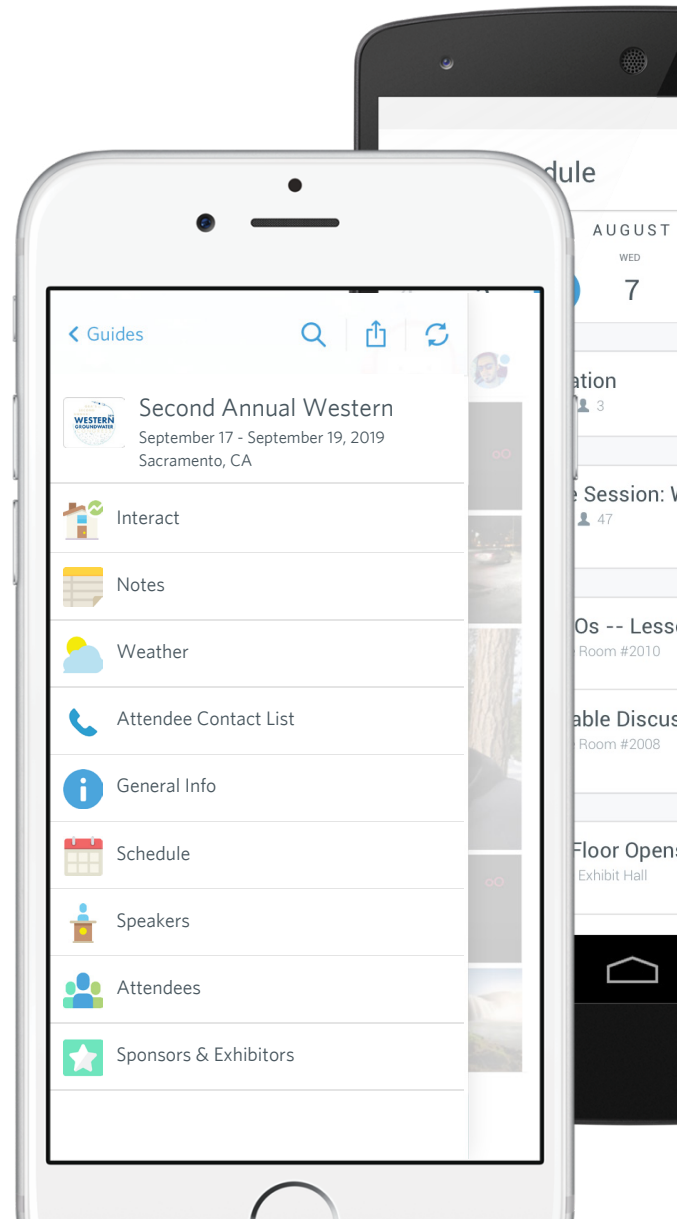


# guidebook

Get the app on your mobile device now, for free.

<https://guidebook.com/g/2019wgc/>

- 1 Visit the above URL on your device
- 2 Tap the "download" button to get the free Guidebook app
- 3 Open Guidebook and look for the guide:  
**Second Annual Western Groundwater Congress**







## POSTER PRESENTATIONS

Swing your rocket over to the poster session to check out all the exciting research, innovative projects, and passionate groundwater professionals with big ideas!

Expediting Soil Remediation at Contaminated Sites  
**Farid Achour, GSI Environmental Inc.**

Communicating the Quality of California's Groundwater Drinking Water Resources Through Online Tools and Resources by the Groundwater Ambient Monitoring and Assessment (GAMA) Program  
**Dori Bellan, State Water Board**

Update on the Online System for Well Completion Reports  
**Ben Brezing, California Department of Water Resources**

Optimized groundwater well placement through the use of the electrical resistivity geophysics  
**Nigel Crook, hydroGEOPHYSICS, Inc.**

Volcanoes, Landslides, & Rivers & The Shasta Valley Basin Hydrogeological Conceptual Model Development & Groundwater Sustainability Planning Efforts  
**Brad Gooch, UC Davis/Larry Walker Associates**

Simulation of Percolation Beneath the Mini Anaheim Artificial Recharge Basin, Orange County, CA  
**Michael Hodges, Cal State Long Beach**

Potential effects of climate change on groundwater recharge and pumping in an irrigated groundwater basin with Mediterranean climate  
**Claire Kouba, UC Davis**

Using Seismic Reflection and Borehole Geophysical Data to Investigate Groundwater Flow in Fault Zones Within Poso Creek Oil Field  
**Zack Levinson, Sacramento State University**

Likelihood analysis of water scarcity remediation for disadvantaged communities in Tulare Lake Basin  
**Nisha Marwaha, University of California, Davis**

Advanced Simulation Capabilities to Explore Pre-and-Post Fire Water Quality after the 2017 Wine Country Fires  
**Michelle Newcomer, Lawrence Berkeley National Laboratory**

Effect of Epoxy-lined Pipeline on Clogging Potential of Soil Columns Receiving Treated Recycled Water  
**Christine Pham, Orange County Water District**

Comparing Change in Storage Calculation Methods and Evaluating Basin Sustainability  
**Kate Richards, GSI Environmental**

Groundwater Modeling Results of Flood-MAR Efficiency in a Cosumnes River Valley Vineyard  
**Alisha Rodriguez, UC Davis**

Estimating Water Budget Components at the Sweetwater Wetlands  
**Brianna Rupkalvis, Tucson Water, University of Arizona**

California's Ambient Groundwater Quality & A Synopsis of Data from California's Groundwater Ambient Monitoring and Assessment (GAMA) Program  
**Scott Seyfried, State Water Board**

Conceptual Design and Modeling of Effluent Recharge and Recovery for Indirect Potable Reuse  
**Jonathan Whittier, Montgomery & Associates**

Posters will remain on display through the end of the event.



### What do GRA members and Columbia Sportswear have in common?

A strong sense of adventure and love of the outdoors, of course! That's why it makes sense that Columbia Sportswear is offering GRA members strongly discounted "employee pricing" at its factory stores in Northern and Southern California.

Columbia and its subsidiaries - Mountain Hardwear, PrAna, and Sorel - are leaders in outdoor clothing, footwear and mountaineering equipment. Only current GRA members are eligible to receive this significant discount so don't let your membership lapse!

## COLUMBIA SPORTSWEAR COMPANY

EMPLOYEE STORE

AT MOUNTAIN HARDWEAR HEADQUARTERS

Stop by the GRA Booth to pick up a pass and learn more about this great benefit!





WESTERN GROUNDWATER CONGRESS GOES

# **HOLLYWOOD**

SEPTEMBER 15 - 17 2020 | BURBANK



**GRA'S 3<sup>RD</sup> ANNUAL!**





# SAVE THE DATE!

California's Premier Groundwater Conference  
**WGC 2020 | September 15-17, 2020**

## *Lights, Camera, GROUNDWATER!*

In 2020, join your community of geologists, engineers and other groundwater thrill seekers for the third annual Western Groundwater Congress in sunny Burbank, California!

You'll find three full day sessions dedicated to Water Resources, SGMA, Contaminants and a myriad of Special Topics related to the furtherance of GRA's vision of Sustainable Groundwater for All. Get ready for your closeup in Tinseltown!





Groundwater  
Resources  
Association  
of California

MISSION ACCOMPLISHED



GRA'S  
SECOND  
ANNUAL  
WESTERN  
GROUNDWATER  
CONGRESS

2019

