

# HYDRO VISIONS

Volume 9, No. 2

GROUNDWATER RESOURCES ASSOCIATION  
OF CALIFORNIA

Summer 2000

## NEWS FROM THE AEG • GRA 2000 TEAM

**A**EG•GRA 2000 is shaping up to be an Annual Meeting that you will not want to miss. All of the available 232 traditional spoken presentation slots are filled, plus at least a dozen poster session slots. Ten symposia are included in the technical paper presentations and they cover a wide range of traditional and cutting-edge topics. The meeting time frame is September 19-26 overall, with technical sessions on September 22-24.

Eight world-class field trips are ready to go, and the field trip guidebook will be a valued reference for years to come. Four short courses will introduce you to state-of-the-art technology and provide real-world experience under the guidance of experts. At press time, 31 exhibitors were signed up, including all of the major vendors and suppliers. The Annual Meeting is your chance to spend some quality time with these experts and see what new technology is headed your way.

Some members who live in the Bay Area – Sacramento nexus will want to make this a commuter meeting to save considerable \$ in hotel bills. Take advantage of this bargain learning and networking opportunity.

Read all about it in this issue of HYDROVISIONS. The Program with Abstracts volume will be posted on GRA's webpage in

July. This issue carries the registration form, hotel information, and a full meeting program description. Please note that the hotel room block is limited, so make your hotel reservations early to take advantage of the special block rate. Double-take note: register as an AEG or GRA member by August 20 and you will receive both the early registration discount *and* the member discount. You can register for the meeting and also reserve a hotel room at the AEG web site, [www.aegweb.org](http://www.aegweb.org), or send in hard copy or fax. ♣

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## The GRA Board of Directors Seek Nominations for the "Kevin J. Neese Memorial Award" and GRA's "Lifetime Achievement Award"

**T**he Board is accepting nominations for both the "Kevin J. Neese Memorial Award" and "Lifetime Achievement Award" until the August 12<sup>th</sup> Board meeting. The "Kevin J. Neese Memorial Award" recognizes a significant accomplishment by a person or entity within the most recent twelve-month period that fosters the understanding, development, protection and management of groundwater. In 1999, the "Kevin J. Neese Memorial Award" was presented to Governor Gray Davis for his leadership in his proposed ban on MtBE. The action was particularly courageous given threatened litigation under the North American Free Trade Agreement (NAFTA) and by the oil companies.

GRA's "Lifetime Achievement Award" has been presented to Eugene E. Luhdorff, Jr. (1998) and David Keith Todd (1999) for their contributions to the groundwater industry. These individuals have dedicated their lives to the groundwater industry and were pioneers in their field of expertise. Nominators for both awards should indicate the reason for the nomination with a brief statement of qualifications for the award by August 10<sup>th</sup>. The nominees will be discussed at the August 12<sup>th</sup> Board meeting. The recipients will receive the award at GRA's annual meeting September 24<sup>th</sup>. If you have further questions, contact Tim Parker at (916) 322-6968. ♣

*The Groundwater Resources Association of California is dedicated to resource management that protects and improves groundwater through education and technical leadership.*



# President's Message

BY TIM PARKER

The focus of this issue's President's message is our upcoming annual meeting. This once-a-year event is one of GRA's most important annual functions, and I hope you will all have a chance to join us.

I would like to take this opportunity to personally invite you to the 9th Annual Meeting of the Groundwater Resources Association of California, in San Jose (the Capital of Silicon Valley) during September 19 to 26, 2000. We are very fortunate to co-sponsor this year's joint annual meeting and technical conference with the nationwide organization of the Association of Engineering Geologists. Our AEG•GRA technical program will focus on groundwater investigation and modeling, environmental investigation and cleanup risk assessment and remediation, and a broad spectrum of engineering geology practice in California. We have ten symposia, including "Conjunctive Use/Groundwater Banking", Environmental Forensics/Forensic Geochemistry", "Innovative Environmental Technologies", and "Engineering Geology in Resource Management and Watershed Restoration". For the field oriented professional, we have eight field trips planned which include: Yosemite, Silicon Valley Groundwater, the San Andreas, and Santa Clara Water Supply Dams and the Calaveras Fault. Additionally, there are a number of short courses, a teacher's workshop, as well as several events for the whole family (Railroad Train Ride/Dinner, Winchester Mystery House, Monterey Bay Aquarium, and more). I would also like to take this opportunity to thank in

advance the more than 60 dedicated volunteers who are working very hard to make this annual meeting a success.

I was raised in California and water and groundwater issues have always been interesting; they have also provided me a challenging career. I've practiced geology, geohydrology, contaminant hydrogeology in rural, urban, Brownfield, down the street almost in my own backyard, and more recently engineering geology and watershed assessment in forestlands. The complexity of water issues has increased, water is getting more difficult to acquire, the demand for supply continues to intensify, and yet we continue to knowingly degrade our own water supplies with recalcitrant chemicals like MTBE. This year, decade, and millennium will be very busy for those of us in the groundwater industry. I am encouraging you to get out of the office, join our annual meeting festivities, take advantage of the wealth of technical information being offered to stay current in your area of expertise, enjoy yourself, and network with your peers in an excellent setting. It is also GRA's opportunity to provide tribute and acknowledgement to our many hard-working volunteers who make our organization what it is today.

Please join us in the sharing of knowledge, enjoyment and festivities, and honoring of our peers. This annual meeting should not be missed! 💧

**HYDROVISIONS** is the official publication of the Groundwater Resources Association of California (GRA). GRA's mailing address is P.O. Box 1446, Sacramento, CA 95812. Any questions or comments concerning the contents of this publication should be directed to the newsletter editor. The editor may also be reached by email.

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The San Francisco Section of the Association of Engineering Geologists and the Groundwater Resources Association of California are proud to host

# AEG • GRA Joint Annual Meeting

DoubleTree Hotel, SAN JOSE, (The Capital of Silicon Valley), CALIFORNIA  
September 19-26, 2000



## “Linking Tradition and Innovation”



GROUNDWATER RESOURCES ASSOCIATION  
OF CALIFORNIA

### TECHNICAL PROGRAM

The Technical Program for AEG • GRA 2000 joint annual meeting will focus on classic engineering geology, earthquake hazards, seismic hazards and remediation, landslides and slope stability, geologic hazards, tunneling, risk assessments and site evaluations, environmental investigation and clean-up, ground water investigation and modeling, fluvial geomorphology, and case histories.

The 2000 Joint Annual Meeting Committee has planned technical sessions, symposia, and short courses that will provide an outstanding opportunity for geologists and other professionals to share state-of-the-art practices.

Technical Sessions will be held September 22-24 (FRIDAY through SUNDAY). Sessions start at 8:00 am and last until 5:00 pm.

Technical programs have been sponsored by Harza Engineering Co., Kleinfelder, and Spectrum Exploration Inc. Technical session breaks have been sponsored by: Brugg Cable; GEOCON, Incorporated; Kleinfelder; Leighton & Associates; Ninyo & Moore; Pacific Geotechnical Engineers; Roscoe Moss; and URS Greiner Woodward Clyde.

Ten exciting Symposia will be presented. If you require further information regarding the symposia, please contact Charles Snell at 415-383-8543. ♣

#### *Naturally Occurring Asbestos Minerals*

Engineering geologists play a critical role in efforts to assess, monitor, and mitigate potential health hazards from naturally occurring asbestiform minerals (NOAMs). This symposium will focus on modes and likelihood of occurrence, identification, and engineering geological controls for hazard mitigation.

#### *Geological Engineering Experience with Complex Geological Mixtures*

Complex geological mixtures are composed of inclusions and surrounding matrix with contrasting physical properties such as strength, stiffness, chemistry, or hydrogeology. This symposium will present research and case histories by geo-practitioners that address the severe technical and economic challenges in characterizing complex mixtures.

#### *Conjunctive Use/Groundwater Banking*

Groundwater banking and conjunctive use of surface water and groundwater are considered elements of California's long-term solution to water resource management. This symposium will discuss opportunities and constraints to successful groundwater banking and conjunctive use, modeling and data collection approaches, policy and legal issues, and other technical and institutional topics.

#### *Landslide Mitigation: A World View –A Special Symposium in Honor of Dr. Earl Brabb*

Professional geologists and geotechnical engineers of the International Landslide Research Group (ILRG) will describe landslide mitigation projects examined during eight international field trips of the International Conference and Field Trip on Landslides (ICFL). The symposium will be presented in honor of Dr. Earl Brabb, founder of the ILRG and ICFL, for his long and distinguished career.

#### *Forensic Engineering Geology*

Geoscience practitioners often find themselves participating in the resolution of legal disputes involving some aspect of engineering geology. Accordingly, this symposium is intended to develop forensic skills by describing the legal framework in which geoscientists practice, presenting a variety of case histories, and discussing the changing interaction of the law, people, and geologic processes.

#### *Resource Management and Watershed Restoration: The Role of the Professional Geologist*

Engineering geologists' critical understanding of earth properties and processes is needed in the interdisciplinary approach to managing or restoring watersheds. This

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## AEG • GRA Annual Meeting

Continued from page 3

symposium will introduce geologic practitioners to the type of work that will need their assistance to be successful in the future. It also provides some of the framework for the interdisciplinary approach required for resource management and watershed restoration.

### *Benefits and Challenges of California's Seismic Hazards Mapping Act*

The California Department of Conservation, Division of Mines and Geology, is mandated by the Seismic Hazards Act to map the State's most prominent earthquake hazards. This symposium will cover the methods used to delineate seismic hazard zones, the technical and regulatory issues faced by cities and counties to implement the Act, and an overview of the more detailed site investigations that will be required in seismic hazards zones.

### *Environmental Forensics/Forensic Geochemistry*

Environmental forensics and forensic geochemistry are an outgrowth of the litigious nature of the environmental movement in the U.S. This symposium will present recent research and applications of environmental forensics and forensic geochemistry research currently used by environmental consultants, expert witnesses, scientists, and attorneys.

### *Innovative Environmental Technologies*

This symposium will present innovative environmental technologies with an emphasis on cutting edge technologies and in-situ applications, such as the samplers used to characterize the soil and groundwater and the delivery systems for

in-situ remediation. Lab and field experience with engineered bioremediation and advanced oxidation, along with advances and innovation in pneumatic remediation equipment, will also be reviewed.

### *E&PPC/ASBOG Professional Practice*

The Ethics and Professional Practice Committee (E&PPC) of the Association of Engineering Geologists and the National Association of State Boards of Geology (ASBOG) jointly sponsor this symposium, which emphasizes presentations by leaders and practitioners in the field of engineering geology, focusing on topics of education, testing, licensing, state-of-the-practice, review, enforcement, ethics, and professional integrity.

## REMEMBER TO REGISTER EARLY !!

SOLINST

"It's as easy as..."  
pick up page 6  
(winter)

## DOUBLETREE HOTEL

The DoubleTree Hotel is situated in the heart of Silicon Valley, between Highway 101 and San Jose International Airport, which is one-half mile away. The hotel is 45 minutes south of San Francisco and one hour north of Monterey and Carmel. Nearby, you will find numerous wineries, Paramount's Great American Theme Park, the Rosicrucian Egyptian Museum and Planetarium, Alum Rock Park, Lick Observatory, San Jose Museum of Art, Tech Museum of Innovation, and the Winchester Mystery House. DoubleTree Hotel has 505 spacious, newly renovated guest rooms, complimentary airport transportation, business center, and offers all the amenities of a first-class hotel.

A limited number of rooms has been reserved at the DoubleTree Hotel price of \$135.00 (single or double). Call early to reserve your room at this special meeting price.

To reserve a room, phone the DoubleTree directly (408-453-4000 - Monday through Friday between 8 am and 5pm) and identify yourself as an attendee of the *Association of Engineering Geologists & Groundwater Resources Association* Conference.

**HOTEL GROUP RATE RESERVATION  
DEADLINE IS AUGUST 21, 2000 !!**



# AEG • GRA ANNUAL MEETING FIELD TRIPS

Eight world-class field trips are being offered in conjunction with the Joint Annual Meeting. For insurance purposes, field trip attendees should plan to ride the bus provided for the trip.

All field trips will begin at 8:00 am from the DoubleTree Hotel and end at the hotel. Every field trip participant will receive one copy of the field trip guidebook, 200 pages, covering all trips, which is included in the cost. For more information, contact the Field Trip Chairs:

Frank Kresse — 707-766-9657  
frkresse@aol.com

Steve Korbay — 707-571-1883  
skorbay@kleinfelder.com

Also see AEG's Web Page: [www.aegweb.org](http://www.aegweb.org)

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## **Field Trip #1** **Pre-Meeting, 3 days, 2 nights**

*Yosemite Valley, Sierra Nevada Foothills and More*

Date: September 19 - 21, 2000  
(Tuesday-Thursday)

Time: 8:00 am - 6:00 pm daily

Cost: \$380 - before August 21, 2000

\$440 - after August 20, 2000

(Limit 12/42)

(includes transportation; two nights lodging [double occupancy]; drinks; and 3 lunches; breakfasts and dinners are on your own)

Location: Bus pickup in front of the hotel

This is your chance of a lifetime to see the wonders of Yosemite Valley and learn about is engineering and environmental geology challenges. *Principal Leaders:* Art Arnold and Rich Fink

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## **Field Trip #2** **Pre-Meeting, 2 days, 1 night**

*Northern San Andreas Fault System and Sonoma County Slope Stability*

Date: September 20 & 21, 2000  
(Wednesday & Thursday)

Time: 8:00 am - 6:00 pm daily

Cost: \$165 - before August 21, 2000

\$195 - after August 20, 2000

(Limit 14/42)

(includes transportation; one night lodging [double occupancy; single supplement = \$30]; drinks; 2 lunches; breakfasts and dinners are on your own)

Location: Bus pickup in front of the hotel

Visit the Sonoma County wine country and examine the San Andreas, Rogers Creek, Healdsburg and Maacama faults. The infamous Rio Nido landslide will be reviewed. Includes a winery stop. *Principal Leader:* James Vantine

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## **Field Trip #3** **Pre-Meeting, 1 day**

*Santa Clara Valley Water Supply Dams and the Calaveras Fault*

Date: September 20, 2000 (Wednesday)

Time: 8:00 am - 6:00 pm

Cost: \$75 - before August 21, 2000

\$95 - after August 20, 2000

(Limit 12/42)

(includes transportation, drinks, and lunch)

Location: Bus pickup in front of the hotel

Visit Coyote and Anderson dams, review the potential effects of the Calaveras and Coyote Creek faults. The trip will end with a wine tasting at the Guglielmo Winery in Morgan Hill before returning to San Jose. *Principal Leader:* Ernest Solomon

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## **Field Trip #4** **Pre-Meeting, 1 day**

*San Francisco Bay Crossings: Engineering Geology of the Golden Gate and Oakland-San Francisco Bay Bridges, and the Bay Area Rapid Transit District Tube*

(Sponsored by Earth Systems Consultants)

Date: September 20, 2000 (Wednesday)

Time: 8:00 am - 6:00 pm

Cost: \$75 - before August 21, 2000

\$95 - after August 20, 2000

(Limit 12/42)

(includes transportation, drinks, and lunch)

Location: Bus pickup in front of the hotel

This exciting trip will consider the site geology, past and future construction challenge, and engineering geology as it influenced the design for the three main crossings into San Francisco. *Principal Leader:* John Coyle

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## **Field Trip #5** **Pre-Meeting, 1 day**

*Living with Moving Ground - Overview of Landslide and Coastal Erosion Processes in San Mateo County, California*

(Sponsored by Cotton, Shires & Associates)

Date: September 21, 2000 (Thursday)

Time: 8:00 am - 6:00 pm

Cost: \$75 - before August 21, 2000

\$95 - after August 20, 2000

(Limit 12/42)

(includes transportation, drinks, and lunch)

Location: Bus pickup in front of the hotel

Participants on this field trip will view several large coastal landslides in San Mateo County, as well as coastal processes and tectonic features that have contributed to modern physiography. *Principal Leaders:* Ted Sayre, Mark Smelser and Bill Cole

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## **Field Trip #6** **Pre-Meeting, 1 day**

*Engineering for Surface Ground Rupture on the Hayward Fault*

Date: September 21, 2000 (Thursday)

Time: 8:00 am - 6:00 pm

Cost: \$75 - before August 21, 2000

\$95 - after August 20, 2000

(Limit 12/42)

(includes transportation, drinks, and lunch)

Location: Bus pickup in front of the hotel

This unusual trip will consider innovative methodologies used to design and construct structures and facilities astride the active and creeping Hayward Fault. *Principal Leader:* Glenn Borchardt

*Continued on page 6*

## AEG • GRA Field Trips

Continued from page 5

### Field Trip #7

Post-Meeting, 2 days, 1 night

*Engineering Geology of West Side of San Joaquin Valley: Aqueducts and Groundwater/Subsidence Issues*

Date: September 25 & 26, 2000  
(Monday & Tuesday)

Time: 8:00 am - 6:00 pm daily

Cost: \$165 - before August 21, 2000  
\$195 - after August 20, 2000  
(Limit 12/42)

(includes transportation; one night lodging [double occupancy]; 2 lunches; and 1 light breakfast at destination hotel; dinner on your own)

Location: Bus pickup in front of the hotel

How is the California State Water Project, one of the engineering wonders of the world, performing along the west side of the San Joaquin Valley some 35 years after construction? What influences has engineering geology had on the State's Dams and aqueducts? Find out on this exciting field trip. *Principal Leader:* Frank Glick

### Field Trip #8

Post-Meeting, 1 day

*Silicon Valley Groundwater*

(Sponsored by HEW Drilling Company)

Date: September 25, 2000 (Monday)

Time: 8:00 am - 6:00 pm

Cost: \$75 - before August 21, 2000  
\$95 - after August 20, 2000  
(Limit 12/42)

(includes transportation, drinks, and lunch)

Location: Bus pickup in front of the hotel

Visit the heart of Silicon Valley where groundwater is 50% of the water supply for 1.7 million people. The trip reviews all the major groundwater issues: water supply, groundwater quality, land subsidence due to excessive groundwater withdrawal, a unique aspect of salt water intrusion, recovery of flowing artesian conditions, several major groundwater contamination sites including a variety of innovative technologies, water recycling and groundwater basin management. *Principal Leader:* Seena Hoose

## AEG • GRA SHORT COURSES

Four short courses will be offered in conjunction with the AEG•GRA Joint Annual Meeting. The courses were selected to offer the attendees a wide variety of educational opportunities. Each course will be accredited for continuing education units (CEU's) and include course materials and coffee/soda breaks. Professional Annual Meeting registration for at least one day is required to participate in the short courses.

### Introduction to Geographic Information Systems

Date: September 19, 2000  
(Tuesday) - 1.0 CEU

Time: 7:30 am to 5:30 pm

Cost: \$150 - before August 21, 2000  
\$170 - after August 20, 2000  
(Limit 7/20)  
(includes transportation and box lunch)

Location:

Off Site (San Jose State University)  
(shuttle pickup in front of the hotel)

This one-day short course will provide participants with an overview of GIS in Seismic Information Systems and geologic applications. Topics will include the use of GIS in seismic hazard assessment, terrain analysis, geomorphometry, and other digital mapping applications. Participants will be introduced to on-line, free, and low-cost digital spatial databases for use in GIS analyses. Prior knowledge or experience with GIS software is neither required nor recommended.

*Instructor:* Paula Messina

### Workshop on Application of the UBC/CBC to Engineering Geologic and Geotechnical Engineering Problems

Date: September 20, 2000  
(Wednesday) - 0.4 CEU

Time: 8:00 am to 12 noon

Cost: \$100 - before August 21, 2000  
\$120 - after August 20, 2000  
(Limit 11/45)

Location: Carmel Room

This short course/workshop will introduce the

significant changes regarding the emphasis on the input for design of post-tensioned slabs and seismic design parameters which have occurred in the last three Unified Building Codes (UBCs) (1991, 1994 and 1997).

*Instructors:* J. David Rogers, Chris Wills, and Mark Petersen

### The Field-Developed Cross-Section: A Systematic Method of Portraying Dimensional Subsurface Information and Modeling for Geotechnical Interpretation and Analysis

Date: September 21, 2000

(Thursday) - 0.9 CEU

Time: Part 1 hotel: 8:00 am to 1:00 pm  
Part 2 field trip: 1:00 pm to 5:00 pm

Cost: \$150 - before August 21, 2000  
\$175 - after August 20, 2000  
(Limit 20/45)

Location:

8:00 am to 1:00 pm

Monterey Room

1:00 pm to 5:00 pm - Field Trip  
(bus pickup in front of hotel)

This one-day short course will cover the field-developed cross-section method, originally developed by Doug Williamson, to provide a systematic approach and reproducible method of collecting data for portrayal of subsurface conditions during drilling. The field-developed cross-section provides a visual tool for evaluation and analysis of conditions pertinent to foundations, earthwork, slopes and slope stability, use of materials and ground flow. The class includes a half-day of lecture and discussion, followed by a half-day of field application.

*Instructor:* Kenneth Neal

### Governing a Nonprofit Board - Developing Leaders for AEG

Date: September 24, 2000

(Sunday) - 0.4 CEU

Time: 1:30 pm to 5:00 pm

Cost: Free to AEG Members

Location: Cedar Room

This course is designed for any member of AEG or GRA who is, may be, or wishes to take a leadership position in any nonprofit board - be it AEG, GRA, or another pro-

# AEG • GRA SHORT COURSES *continued*

professional society, the scouts, your church or other civic organization, local government, or a committee where you work. Topics to be presented and discussed include:

- ▲ Evolution of nonprofit organization
- ▲ Leadership vs. management
- ▲ Power vs. authority
- ▲ Leadership ethics vs. principles
- ▲ Responsibilities of a board member
- ▲ Financial management and fiscal policy (What is a financial statement?)
- ▲ Cash flow vs. accrual (What are accepted accounting principles?)
- ▲ Fund raising, marketing, and membership growth
- ▲ Limiting liability
- ▲ Contracting
- ▲ Strategic planning
- ▲ Chairing a committee and Robert's Rules of Order (Who was Robert anyway?)

Examples from the leadership history of the Association of Engineering Geologists, other societies, and local government will be presented for discussion and evaluation by the participants. Participants will gain a broad understanding of how to serve in a volunteer position of leadership of any organization. The course will be organized in a seminar format to allow open discussion for the mutual education of all.

*Instructor:* Christopher Mathewson, AEG Executive Director

## ***Soil Stratigraphy for Trench Logging***

Date: September 25 & 26, 2000 (Monday & Tuesday) - 1.9 CEU

Time: Part 1- hotel: 8:00 am to 5:00 pm (Sept. 25)  
Part 2- field: 7:30 am to 5:30 pm (Sept. 26)

Cost: \$300 (students: \$320)  
before August 21, 2000  
\$330 (students: \$350)  
after August 20, 2000

(Limit 12/45)

(includes transportation and box lunch each day)

Location:

Part 1: Sun Valley Room

(Sept. 25)

Part 2: bus pickup in front of hotel

(Sept. 26)

This course will teach attendees how to improve their logs and descriptions of soils, with special emphasis on soils uncovered during seismic trenching and offset by faults. Topics to be discussed include:

- ▲ AB&Cs of soils: soil-horizons from simple to complex
- ▲ CT POT: the factors of soil formation
- ▲ Climate: how water improves rocks
- ▲ Topography: how gravity helps water improve rocks
- ▲ Parent Material: how rocks control soils
- ▲ Organisms: construction and destruction in soils
- ▲ Pedochronology: perspective and bookkeeping for the ages
- ▲ Relative dating methods: chronosequences
- ▲ Absolute dating methods: U/Th, C-14, and others
- ▲ Laboratory methods: PSD and soil mineralogy
- ▲ Recognizing important soil features
- ▲ Soil tectonics: what faults do to soils; what soils do to faults

*Instructor:* Dr. Glenn Borchardt

***All itineraries and schedules are subject to change.***

***For more details, see AEG's Web Page: [www.aegweb.org](http://www.aegweb.org)***

***or GRA's Web Page: [www.grac.org](http://www.grac.org)***

## **Positions Available**

**See Page 23 and 24 for Details**

# AEG • GRA ANNUAL MEETING SPECIAL EVENTS (Fun Stuff!)

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## Ice Breaker Reception

(Sponsored by Upp Geotechnology Inc.)

Date: September 21, 2000 (Thursday)

Time: 6:00 pm - 8:00 pm

Cost: *Complimentary to Annual Meeting Registrants and Spouse/Guests*

Location: Exhibitors' Area — Donner Pass/Siskiyou/Cascade

The Ice Breaker opens the Exhibition Thursday evening in the Exhibitor area, with the opportunity to get acquainted with the vast array of products and services offered to the industry. One complimentary drink per person, as well as complimentary hors d'oeuvres will be served. A surprise Silicon Valley resident will be on hand to welcome you.

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## Exhibitors Luncheon

Date: September 22, 2000 (Friday)

Time: 12:00 noon - 1:30 pm

Cost: *Complimentary to Annual Meeting Registrants and Spouse/Guests*

Location: Exhibitors' Area — Donner Pass/Siskiyou/Cascade

The Exhibitor Luncheon will be served in the Exhibitors' Area, compliments of the exhibitors. This lunch is a very special function, because it allows attendees to show support to the many companies that have made the Joint Annual Meeting possible. Remember that a meeting of this caliber would not be possible if it were not for the generous support the exhibitors offer AEG and GRA!!

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## Family Night - Roaring Camp and Big Trees RR and Western BBQ

(Sponsored by Upp Geotechnology Inc.; and Darwin Myers Associates)

Date: September 22, 2000 (Friday)

Time: 4:15 pm - 11:00 pm

Cost: \$55 - Adults; \$45 - children 12 and under  
(Max. Limit - 200)

Location: Bus pickup in front of the hotel

Our featured family-oriented event will be a sunset steam train ride on the Roaring Camp and Big Trees Railroad through the Coast

Redwoods in Santa Cruz County, followed by a western barbecue dinner. Entertainment will be provided to accompany your dinner. Your ticket will be an official bandana — so sign up and climb aboard open railroad cars and let the vintage 1890 Shay narrow gauge steam locomotive pull you through the redwoods up grades as steep as nine percent. There is a genuine railroad switchback to be negotiated, and (literally) bells and whistles aplenty. Kids prices are available. For more information, see the Web Page [www.roaringcamprr.com](http://www.roaringcamprr.com). For a literary background, you may wish to read Bret Harte's "The Luck of Roaring Camp." Kid's dinner is a giant hot dog; adult meals, BBQ chicken and ribs. Bring a light jacket, as it can be cool in the Redwoods at night. Also be sure to wear comfortable walking shoes.

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## AEG Corporate Business Meeting and Luncheon

(Sponsored by AGRA Earth & Environmental, Inc.)

Date: September 23, 2000 (Saturday)

Time: 12:00 noon - 1:30 pm

Cost: \$27

Location: Santa Clara and San Jose Rooms

Are you a leader in AEG, about to undertake new responsibilities in AEG, or just interested in the Association's plans for the future? Want to see, hear, and meet the leaders? This event is for you!! Association officers, board members, and committee managers will be there to participate, report on their activities, witness the installation of new officers, and attend the President's Awards Ceremony. Participate in our Annual Corporate Business Meeting/Luncheon and have fun doing it, too!

---

## 2000 Annual Banquet

Date: September 23, 2000 (Saturday)

Time: 6:30 pm - 7:15 pm: Reception  
7:15 pm - 10:30 pm: Dinner

Cost: \$60

Location: Oak and Fir Rooms

After a reception and mingling with friends, enjoy a delicious dinner, visit some more with friends, and recognize the award winners who have given so much to our industry and Association. This is your opportunity to recognize them and also pay tribute to their accomplishments. A cash

bar reception starts at 6:30 pm. Dinner includes wine (two bottles to a table, only).

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### TAKE A STUDENT TO DINNER !!

Buy an Annual Banquet Ticket and donate it to one of our participating students!

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## Women in AEG/GRA/AWG Breakfast

(Sponsored by Redwood Geotechnical Engineering, Inc.)

Date: September 24, 2000 (Sunday)

Time: 7:00 am to 8:00 am

Cost: \$14

Location: Santa Clara Room

Join members of the Association of Engineering Geologists, Groundwater Resources Association, and the Association for Women Geoscientists at our networking breakfast, where we will feature our Keynote Speaker, Carey Peabody. All parties interested in enhancing the professional growth and advancement of women in the geosciences are encouraged to attend!

---

## GRA Luncheon

Date: September 24, 2000 (Sunday)

Time: 12 noon to 1:30 pm

Cost: \$27

Location: San Jose/Santa Clara Rooms

Join members of the Groundwater Resources Association of California for their annual meeting with Keynote Speaker.

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## Speakers' & Moderators' Breakfast

Date: September 22, 2000 (Friday)

September 23, 2000 (Saturday)

September 24, 2000 (Sunday)

Time: 6:30 am - 8:00 am

Cost: *Complimentary to Speakers & Moderators*

Location: Boardroom

A speakers' and moderators' breakfast will be held each morning for the day's speakers and session moderators. The breakfast is a great time to get acquainted with your session chair and other speakers as well as to review the procedures for the day. The breakfast is open to speakers and moderators only on the day of their presentation.

*continued on page 9*



# SPOUSE/GUEST ACTIVITIES

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## *Hospitality Suite*

(Sponsored by Darwin Myers Associates; and RE Disclosures)

Date: September 20 - 24, 2000  
Wednesday - Sunday

Time: 7:00 am - 5:00 pm

Cost: *Complimentary to Registrants*

Location: San Carlos Room

The Hospitality Suite is located on the first floor. Stop in to relax or to meet old friends and make new friends. Our host will be able to answer your questions about San Jose and surrounding areas. For all registered guests/spouses, be sure to pick up your welcome gift.

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## SPOUSE/GUEST TOURS

The 43<sup>rd</sup> AEG and 9<sup>th</sup> GRA Annual Meetings offer five exciting spouse/guest tours.

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### *Winchester Mystery House*

Date: September 21, 2000 (Thursday)

Time: 1:00 pm to 4:30 pm

Cost: \$25

Location: Shuttle pickup in front of the hotel

Visit the Winchester Mystery House, where no one has been able to explain the mysteries that exist within the mansion or why Sarah Winchester kept carpenters' hammers pounding 24 hours a day for 38 years. Price includes shuttle and site admission.

---

### *From Tradition to Innovation*

Date: September 22, 2000 (Friday)

Time: 10:00 am to 3:00 pm

Cost: \$45

Location: Bus pickup in front of the hotel

Following the theme of our annual meeting, this tour will take you from Tradition to Innovation. Visit the Traditional (Mission San Jose, built in 1797) to the Innovation (the Intel Museum, opened in 2000). Price includes transportation, admission, and lunch.

---

### *Filoli Gardens and Mansion, Allied Arts Guild*

Date: September 23, 2000 (Saturday)

Time: 9:00 am to 4:00 pm

Cost: \$65

Location: Bus pickup in front of the hotel

Stroll through the Filoli, a rare and historically important example of an early 1900's Country Estate. The Filoli Garden is considered one of the finest examples of a private estate garden representing the "Golden Age of American Gardens." Price includes transportation and lunch. Lunch will be at the Allied Arts Guild in Menlo Park. After lunch, you may wander through an enchanting complex of shops, gardens, and artists' studios.

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### *Monterey Bay Aquarium and Cannery Row*

Date: September 24, 2000 (Sunday)

Time: 8:30 am to 4:00 pm

Cost: \$65

Location: Bus pickup in front of the hotel

The marvels of our ocean planet come to life at the world-acclaimed Monterey Bay Aquarium located on John Steinbeck's Cannery Row. The aquarium features more than 100 galleries and exhibits. After a picnic lunch, you will be free to return to the aquarium or stroll down historic Cannery Row to visit its antique stores and shops. Price includes transportation and lunch.

---

### *San Jose Walking Tour*

Date: September 25, 2000 (Monday)

Time: 9:00 am to 1:00 pm

Cost: \$3 (Buy your own trolley ticket)

Location: Meet at the main lobby of the hotel

We will catch the light rail 1-1/2 blocks from the hotel and ride into downtown San Jose where we will tour the highlights of this fair city. As this is an introductory tour, admission fees (where charged) are not included. We may see St. Joseph's Cathedral, the Tech Museum of Innovation, the American Museum of Quilts and Textiles, the Peralta Adobe and Fallon House, and the Plaza De Cesar Chavez with its controversial statue of Quetzalcoatl. Weather will be warm; walking may cover several blocks but will not be strenuous. Wear walking shoes and bring sun protection. We will return to the hotel by light rail. ♡

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# EXHIBITORS and SPONSORS

As of press time of this Summer issue of HydroVisions, the following exhibitors and sponsors will join us at the annual meeting (in alphabetical order):

---

## EXHIBITORS

*(alphabetically as of press time)*

Applied Geomechanics, Inc.  
Association for Women Geoscientists  
Beta Analytic, Inc.  
Blackhawk Geometrics Inc.  
Brugg Cable  
California State Board of Registration for Geologists & Geophysicists  
Clean Environment Equipment  
Clear Heart Drilling, Inc.  
Columbia Analytical Services Inc.  
EEGS (Environmental & Engineering Geophysical Society)  
FAS-TEK Engineering Support Services  
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Geokon, Inc.  
Geometrics  
Global Drilling Supply, LLC  
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Northwest Geophysical Associates, Inc.  
ROCTEST, Inc.  
RST Instruments Ltd.  
Sequoia Analytical  
Slope Indicator Company  
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TECHBASE Intl.  
U.S. Geological Survey - Landslide Program  
Water Resources Center Archives  
Welenco, Inc.

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## SPONSORS

*(alphabetically as of press time)*

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Redwood Geotechnical Engineering, Inc.  
Roscoe Moss Company  
Spectrum Exploration, Inc.  
Upp Geotechnology, Inc.  
URS Greiner Woodward Clyde

---

**REMEMBER TO  
REGISTER EARLY !!**

---

**TEACHERS  
WORKSHOP**

Our Teachers Workshop is being offered on Saturday, September 23, 2000, in conjunction with the AEG•GRA Joint Annual Meeting.

See the July AEG NEWS (Program with Abstracts) for details, or contact Julie Keaton ([meetings@aeg.tamu.edu](mailto:meetings@aeg.tamu.edu)) for a Teachers Workshop brochure.

*The AEG•GRA 2000 Annual Planning Committee would like to thank the Geo3 (GeoCubed Group) of the Civil Engineering Practice of Exponent Failure Analysis Associates in Menlo Park, California for its generous support in providing meeting facilities for the committee throughout 2000*

I AM A MEMBER OF:

AEG MEMBER

GRA MEMBER

NEITHER

# REGISTRATION FORM



## AEG • GRA 2000 Joint Meeting



Association of Engineering Geologists and Groundwater Resources Association

SEPTEMBER 19 - 26, 2000

NAME (LAST)	(FIRST)	(MI)	NAME FOR BADGE	MEETING STATUS	
				Speaker	
				Exhibitor	
NAME OF SPOUSE/GUEST			NAME FOR BADGE	Moderator	
				Student	
(Please list attending children's names and ages.)			Awardee		
COMPANY/INSTITUTION				Spouse/Guest	
				Field Trip Staff	
				Children (No. _____)	
ADDRESS				AEG or GRA MEMBERSHIP	
				Member	
CITY/STATE/ZIP		COUNTRY		Associate	
				Affiliate	
PHONE NUMBERS				Student	
Day ( )	-	Evening ( )	-	Honorary	
FAX NO.		E-MAIL:		Emeritus	
( ) -				Past President	
				Teacher	
ANNUAL MEETING REGISTRATION			Before 8/21/00	After 8/20/00	
AMOUNT					
Full Registration: AEG or GRA Member			\$ 210.00	\$ 260.00	
Full Registration: Non-Member			\$ 250.00	\$ 300.00	
<u>AEG NON-MEMBERS</u> — Save \$40 on your registration fee by filling out and mailing in AEG's Membership Form.			\$ 210.00	\$ 260.00	
<u>GRA NON-MEMBERS</u> — Save \$40 on your registration fee by filling out and mailing in GRA's Membership Form.			\$ 210.00	\$ 260.00	
Short Course ONLY Limited Registration *			\$ 40.00	\$ 50.00	
Field Trip ONLY Limited Registration *			\$ 40.00	\$ 50.00	
Student (full time with proof of current enrollment)			\$ 50.00	\$ 70.00	
Spouse/Guest Nonprofessional Registration: with Full Time Student			\$ 10.00	\$ 15.00	
with Full Member / Non-Member			\$ 25.00	\$ 30.00	
Daily Full Member Registration: 9/22 (Fri) 9/23 (Sat) 9/24 (Sun)			\$ 90.00	\$ 110.00	
Daily Non-Member Registration: 9/22 (Fri) 9/23 (Sat) 9/24 (Sun)			\$ 110.00	\$ 130.00	
Daily Student Registration: 9/22 (Fri) 9/23 (Sat) 9/24 (Sun)			\$ 25.00	\$ 35.00	
REGISTRATION FORM CONTINUED ON OTHER SIDE				Subtotal:	\$

\* Not required if you are registering for at least one day of technical sessions.

# REGISTRATION FORM — continued

SHORT COURSES (requires regular or limited-short-course reg.)		Before 8-21-00 / After 8-20-00 / No.			
Introduction to Geographic Information System (9/19)	[full day]	\$150.00	\$170.00		
Workshop on Application UBC/CBC Engr.Geology (9/20)	[half day]	\$100.00	\$120.00		
Field-Developed Cross-Section (9/21)	[full day]	\$150.00	\$175.00		
Governing a Nonprofit Bd.-Developing Leaders AEG (9/24)	[half day]	\$ free	\$ free		
Soil Stratigraphy for Trench Logging (9/25&26)	[two days]	\$300.00	\$330.00		
AEG FIELD TRIPS (requires regular or limited-field-trip reg.)		Before 8-21-00 / After 8-20-00 / No.			
FT#1: Yosemite Valley, Sierra Nevada Foothills (9/19-21)	[3 days]	\$380.00	\$440.00		
FT#2: No.San Andreas Fault System/Sonoma Co. (9/20&21)	[2 days]	\$165.00	\$195.00		
FT#3: Santa Clara Water Supply Dams/Calaveras Fault(9/20)[full day]		\$ 75.00	\$ 95.00		
FT#4: San Francisco Bay Crossings (9/20)	[full day]	\$ 75.00	\$ 95.00		
FT#5: Living with Moving Ground (9/21)	[full day]	\$ 75.00	\$ 95.00		
FT#6: Engr.for Surface Ground Rupture/Hayward Fault(9/21)[full day]		\$ 75.00	\$ 95.00		
FT#7: Engr.Geology/W. Side San Joaquin Valley(9/25&26)	[two days]	\$165.00	\$195.00		
FT#8: Silicon Valley Groundwater (9/25)	[full day]	\$ 75.00	\$ 95.00		
SPECIAL EVENTS (requires conference registration)		Number		AMOUNT	
Ice Breaker Reception (Thursday, Sept. 21)		Must Register		Complimentary	
Exhibitors' Luncheon (Friday, Sept. 22)		Must Register		Complimentary	
Family Night - Roaring Camp & Big Trees RR & Western BBQ (Friday, Sept. 22):		Adults — \$55.00			
		Children (12 & under)— \$45.00			
AEG Corporate Business Meeting & Luncheon (Saturday, Sept. 23)		\$27.00			
Annual Banquet (Saturday, Sept. 23)		\$60.00			
Women in AEG/GRAlAWG Breakfast (Sunday, Sept. 24)		\$14.00			
GRA Luncheon (Sunday, Sept. 24)		\$27.00			
TAKE A STUDENT TO DINNER — Buy an Annual Banquet Ticket and Donate to One of our Participating Students		\$60.00			
STUDENT: If you are interested in participating in "TAKE A STUDENT TO DINNER" - please check here:					
Speakers'/Moderators' Breakfast: 9/22 (Fri) — 9/23 (Sat) — 9/24 (Sun)		Must Register		Complimentary for Speakers	
SPOUSE/GUEST ACTIVITIES		Number			
Winchester Mystery House (Thursday, Sept. 21)		\$25.00			
From Tradition to Innovation (Friday, Sept. 22)		\$45.00			
Filoli Gardens/Mansion, Allied Arts Guild (Sat., Sept. 23)		\$65.00			
Monterey Bay Aquarium & Cannery Row (Sunday, Sept. 24)		\$65.00			
San Jose Walking Tour (Monday, Sept. 25)		\$ 3.00			
TEACHERS WORKSHOP (held Saturday, September 23)		Number			
See July AEG NEWS (Program with Abstracts) for more details		\$25.00			
SPECIAL NEEDS:	PREFER VEGETARIAN	MAKE CHECK PAYABLE TO "AEG•GRA 2000"		TOTAL AMOUNT:	
MEALS:	DIABETIC:			\$	

San Jose DoubleTree Hotel (408) 453-4000.

Identify yourself as attendee of AEG•GRA Conference; deadline for conference rates – August 21, 2000 !!



Please indicate method of payment (check one):

Check      Amount of \$ \_\_\_\_\_

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Account Number for charge card (include all digits):  
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*If you have any questions, contact:*

Julie Keaton  
520-204-1553  
meetings@aeg.tamu.edu

*Send registration form to:*

AEG•GRA 2000  
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**It's as easy...**  
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## **GRA Offers Lapel Pins**

If you would like to buy a lapel pin, attend your nearest branch meeting or order a pin now. Pins cost \$7.00 at a branch meeting or \$8.00 thru the mail. Send your checks to: GRA, P.O. Box 1446, Sacramento, CA 95812. 💧

# New Members Who Have Joined GRA Between 11/1/99 and 5/31/00 Welcome!

Jeffrey Alan	Zymax Envirotechnology, Inc.	CC	Jose Huizar	Weston Benshoof, etal	SC
Lainie Alexson	Hatch & Parent	CC	Cynthia Jimenez	Crawford Consulting, Inc.	SFB
Steven Amerikaner	Hatch & Parent	CC	Anne Koob	Montgomery Watson	SFB
Cynthia Avakian	Hydro-Env. Technologies, Inc.	SFB	Gary Kvistad	Hatch & Parent	CC
Lorien Bareng	Applied Env. Technologies, Inc.	CC	Eric Lautenbach	D&M Consulting Engineers	SFB
Dana Bergmann	Crawford Consulting, Inc.	SFB	Jeff Lefkoff	Navigant Consulting, Inc.	SAC
Ivo Bergsohn	South Placer Public Utility District	SAC	Todd Loar	Geomatrix Consultants, Inc.	SFB
Martin Bloes	Geomatrix Consultants, Inc.	SFB	Bettina Longino	Geomatrix Consultants, Inc.	SFB
Reid Bowman	Applied Process Technology, Inc.	SC	Diane Love	Tetra Tech, Inc.	CC
Greg Brorby	Geomatrix Consultants, Inc.	SFB	Justin Lucke	Hatch & Parent	CC
Ray Calhoun	Applied Process Technology, Inc.	SFB	Richard Manser	Harding Lawson Associates	SFB
Drew Cannon	MFG, Inc.	SFB	Leah Matheson	MSE Technology Applications, Inc.	SAC
Edward Casey	Weston Benshoof, etal	SC	Sheri Mazur	HydroGeologic, Inc.	SAC
Terri Cooper	Montgomery Watson	SFB	Patrick McCullough	IT Group	SC
Thomas Crowley	San Bernardino Valley Water Cons.	SC	Kelly McTique	Weston Benshoof, etal	SC
Steve Dalton	Kleinfelder, Inc.	SAC	Richard Munsch	Delta Environmental Consultants	SAC
Glenn Daniels	Zymax Forensics	CC	Kiat Ng	Geomatrix Consultants, Inc.	SFB
Anthony Daus	Geomatrix Consultants, Inc.	SC	Stephanie Osler Hastings	Hatch & Parent	CC
Autumn Davis	URS	SAC	Christopher Palmer	CMP Consulting	SFB
Craig Drizin	Weber Hayes & Associates	SFB	Toni Pezzetti	CH2M Hill	SAC
Lance Eckhart	Allwest Remediation	SC	Jason Preece	Camp Dresser & McKee, Inc.	SFB
Kenn Ehman	Skyline Ridge, Inc.	SFB	John Riggi	Cambria Environmental Technology, Inc.	SFB
Gary Ferweda	Global Drilling Supply, LLC	SC	Robert Saperstelin	Hatch & Parent	CC
Michael Fife	Hatch & Parent	CC	Robert Schultz	Cambria Environmental Technology, Inc.	SFB
Eric Findlay	Kleinfelder, Inc.	SAC	Steve Silva	Montgomery Watson	SFB
Robert Foss	Cambria Environmental Technology, Inc.	SFB	Jim Steele	Tetra Tech, Inc.	CC
Christine Frahm	Hatch & Parent	CC	John Swanson	Air Toxics Limited	SAC
Alvin Franks	Engineering/Env. Geology Consultant	SAC	Ali Tabidian	California State University, Northridge	SC
Elizabeth Giffin	Weston Benshoof, etal	SC	Kenny Kean Tan	Keantan Laboratories	SC
Melissa Gossell	ARCADIS Geraghty & Miller, Inc.	SFB	Richard Theis	Global Drilling Supply, LLC	SC
Joshua Graber	OGDEN Env. and Energy Services	SFB	Rob Traylor	Komex-H2O Science, Inc.	SC
Robert Haney	Applied Process Technology	SC	Bryan Turner	Geomatrix Consultants, Inc.	SFB
Jack Hardin	Secor International Incorporated	SFB	Linda Vida	UC Berkeley, Water Resources Center	SFB
Christine Hatch	Harding Lawson Associates	SFB	Daniel Wendell	CH2M Hill	SFB
Stanley Hatch	Hatch & Parent	CC	Mark Wheeler	Crawford Consulting, Inc.	SFB
Steve Hickey	IT Group	SAC	Jeremy Wire	Geoconsultants, Inc.	SFB
John Hofer	Geoconsultants, Inc.	SFB	Matthew Worthington	Blasland, Bouck and Lee, Inc.	SC
Mike Hoffman	Camp Dresser & McKee, Inc.	SC			

## Voluntary Contributions for Fiscal Year 2000, Thank You!

### Founder \$1000+

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## Has the Time Come for Sampling Standards?

BY BART SIMMONS

**“The reliability of the analysis cannot exceed that of the sampling step, and painstaking analysis of a poor sample is wasted effort (Skoog).”**

### *The Sampling Problem*

Recent events have elevated the issue of sampling standards to a resolution. Quality management of laboratory analysis is closely monitored, and environmental laboratories must meet detailed standards. A national program of laboratory accreditation, the National Environmental Laboratory Accreditation Program (NELAP), is scheduled to begin in January 2001 with the announcement of the first class of NELAP-accredited labs. NELAP uses standards which have been approved by the National Environmental Laboratory Accreditation Conference (NELAC), based on international standards.

Although sampling is clearly a key part of the environmental measurement process, NELAC has chosen to focus on laboratory standards for the initial implementation of the National Environmental Laboratory Accreditation Program. The NELAC Field Activities Committee and its predecessor, the Ad Hoc Field Measurement Committee, have reviewed the issue of sampling standards. The committee was requested by the Environmental Laboratory Advisory Board (ELAB) to evaluate the need for sampling standards by collecting information on sampling error and the effect it has on data quality and subsequent decision making.

The committee found considerable evidence for the importance of reliable sampling. Just one example: the Army Corps of Engineers (Jenkins, 1997) studied

sampling of explosives-contaminated soil in a firing range and found that sampling variability was 10 times the analytical variability, although they compared samples that were taken only 61 cm apart.

### *The Standards*

ISO 17025 is a standard, which was approved in 1999 by the International Organization for Standardization (ISO) and replaces an earlier guide, ISO Guide 25. ISO 17025 is a standard for testing laboratories, so it may seem a strange place for a sampling standard. Nevertheless, 17025 has specific requirements for sampling plans, experience and training of samplers, documentation of sampling, and sampling techniques.

A standard based closely on ISO 17025 is being considered by the National Environmental Laboratory Accreditation Conference. The NELAC Board of Directors has established a policy of revising NELAC standards to comply with ISO 17025 as soon as possible, and the sampling standard would help to maintain consistency with international standards.

The NELAC standards apply to laboratories that generally are already accredited by some accrediting body, e.g., a state program. The sampling standard will affect only those laboratories which also do sampling, a minority of the work done for environmental compliance. However, the language in ISO 17025 is general, and could be used for other

sampling operations. Because of the large number and diversity of organizations doing sampling, implementing a sampling standard will be a gradual process. One area of early implementation could be soil gas testing. California Department of Health Services certifies mobile labs doing soil gas testing, but does not include sampling as part of the certification.

The environmental community is increasingly aware of the potential errors from sample collection, and there will continue to be a desire for improvement in sampling. ♪

### *References*

ISO/DIS 17025 - “General Requirements for the Competence of Testing and Calibration Laboratories,” International Organization for Standardization. Web: [www.iso.ch](http://www.iso.ch)

Jenkins, Thomas F. *et al*, “Assessment of Sampling Error Associated with Collection and Analysis of Soil Samples at a Firing Range Contaminated with HMX,” US Army Corps of Engineers, Cold Regions Research & Engineering Laboratory, Special Report 97-22, September, 1997. Web: [www.dtic.dla.mil/](http://www.dtic.dla.mil/) or [www.crrel.usace.army.mil](http://www.crrel.usace.army.mil)

Skoog, D.A., and D.M. West, *Fundamentals of Analytical Chemistry*, Holler, Saunders College Publishing, 6th ed. NY, NY, pg. 750-760, 1992.

*Bart Simmons, Ph.D., is Chief of the Hazardous Materials Laboratory, Department of Toxic Substances Control, Berkeley, CA. He can be reached at [bsimmons@dtsc.ca.gov](mailto:bsimmons@dtsc.ca.gov) or (510) 540-3003.*

# Membership Drive

**G**RA has launched its 2000 membership drive. We are reaching out to those we know who work with groundwater in California and inviting them to join the growing number of people who use GRA as a forum for networking, obtaining and sharing information on groundwater and advocating for its protection and wise use. Our newly designed color Membership Guide is being mailed to prospective members. If you know of someone who might be interested in joining GRA, contact us and we will see that they receive a Membership Guide.

Current GRA members should have already received a member renewal invoice for their 2000 dues. In 1999 Regular Member dues rose, for the first time since GRA was founded in 1992, to \$60 per year.

Membership dues are used to cover the costs of services to GRA members, production and mailing of HydroVisions,

administrative costs associated with running the organization, development of education seminars and an annual meeting. Additional funds from grants, contributions, and fund raising efforts will enable GRA to develop more public outreach and education efforts, college scholarships, and production of a second edition of California Groundwater Management.

Currently, GRA has over 800 members from government agencies, universities, consulting firms, non profit organizations, businesses, special interest groups, and the public—a diversity that encourages balance and provides credibility.

Your support of GRA is truly appreciated. We are looking forward to a year filled with education seminars and the AEG•GRA co-sponsored 9th Annual Meeting being planned for September 19-26, 2000 in San Jose.

Your commitment allows GRA: to educate new decision-makers in the California


legislature about the importance of groundwater; conduct seminars and conferences for groundwater professionals who desire to stay out-in-front on issues, research, and trends affecting the industry; and look ahead to form alliances with organizations that share our interest of protecting and improving California's valuable groundwater resources.

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## *Membership Information*

Supporting Member . . . . .	\$85.00
Regular Member . . . . .	\$60.00
Associate Member . . . . .	\$50.00
Business Member (for 3 employees)	\$150.00
Corporate Sponsor . . . . .	\$250.00

Please send member renewals to:

GRA, PO Box 1446 Sacramento, CA 95812  
or use our web page [www.grac.org](http://www.grac.org) to electronically submit your membership information. 

**Envirotech**

**pick up from  
page 5**

**winter**

**Waterloo**

**pick up page 13  
(fall)**



## 1999 Statement of Activity — Unaudited

### Changes in Unrestricted Net Assets

#### Revenues:

Program Fees	\$42,548
Membership Dues	34,055
Contributions	1,418
Other Income:	
Interest	\$ 1,670
Special Activity – Lapel Pins	72
Reimbursed Expenses	<u>200</u>
Total Other Income	<u>1,942</u>
Total Unrestricted Revenues	\$79,963

#### Expenses

Program Expense	\$40,331
Executive Director	24,750
Printing and Reproduction	18,764
Association Promotion/Development	3,168
Insurance	2,018
Dues and Subscriptions	1,998
Contract Labor	1,965
Travel	1,519
Professional Fees, (Tax Prep./Accounting)	635
Supplies	240
Bank Charges	122
Licenses and Permits	<u>20</u>
Total Expenses	\$95,530

Decrease in Unrestricted Net Assets (\$15,567)

#### Changes in Permanently Restricted Net Assets

Grants Received	\$ 0
Grant Labor and Admin.	<u>248</u>
Decrease in Permanently Restricted Net Assets	<u>(\$ 248)</u>

Decrease in Net Assets (\$15,815)

BEGINNING NET ASSETS (CASH)	<u>\$59,942</u>
ENDING NET ASSETS (CASH)	<u>\$44,127</u>

=====

GRA has not received income for the 1999 Annual meeting. This income will be used to increase our "Unrestricted Net Assets" in 2000.

# Legislative Corner

BY HARRISON PHIPPS, EXECUTIVE DIRECTOR

#### AB 303, as amended 8/16/99, Thomson. Ground Water.

The bill would enact the Local Groundwater Management Assistance Act. The bill would create the Local Groundwater Assistance Fund. The bill would authorize the money in the fund, upon appropriation by the Legislature, to be used by the Department of Water Resources to assist local public agencies by awarding grants to those agencies to conduct groundwater studies, or to carry out groundwater monitoring and management activities, or both, as prescribed. The bill would require the Department to award grants based on the recommendations of a Technical Advisory Panel, the members of which would be required to be appointed by the Secretary of the Resources Agency, as specified.

STATUS: Senate Appropriations Committee

#### AB 980, as amended 4/14/99, Ducheny. Conjunctive use.

This bill would authorize the Department of Water Resources to provide grants to local agencies for the purposes of undertaking feasibility studies, pilot projects and capital outlay projects relevant to conjunctive use programs. As amended, it would make a legislative finding and declaration and a statement of legislative intent relating to the conjunctive management of surface water and groundwater.

STATUS: Senate Agriculture and Water Resources Committee

#### SB 960, as amended 8/19/99, Costa. Groundwater.

Revises the term groundwater basin to exclude a basin in which the average well yield, excluding domestic wells that supply water to a single-unit dwelling, is less than 100 gallons per minute; revises the definition of recharge area to include in-lieu recharge areas.

STATUS: Senate Inactive File

#### SB 1341, as amended 4/24/2000, Burton. Water Resources.

This bill requires the Department of Water Resources, as part of updating the California Water Plan, to conduct a study to determine the amount of water needed to meet the State's future needs and to recommend programs, policies, and facilities to meet State Water Project needs, as prescribed. Requires DWR to establish an advisory committee, comprised of specified representatives to assist in conducting the study.

STATUS: Senate Third Reading File

# Senate Passes Bill to Extend Board of Geology

BY BETSY MATHIESON, PRESIDENT CCGO

On May 24 the California Senate passed Senate Bill 2028, which would extend the life of the Board of Geology, on a 38-0 vote. The State Assembly is now considering the bill. The California Council of Geoscience Organizations has supported this legislative action through letters, visits to legislators and their aides, and testimony at public hearings.

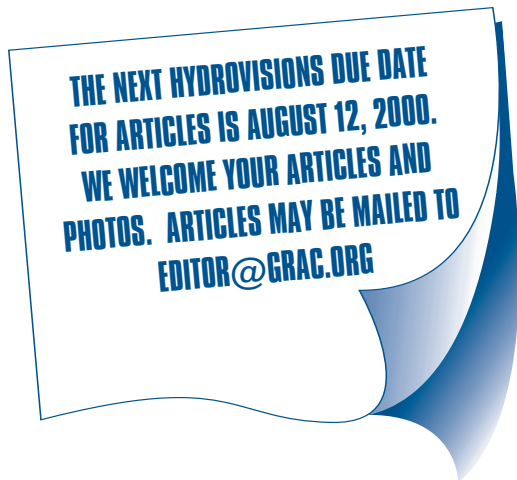
The full text of the bill is available at <http://www.leginfo.ca.gov>. The following background information is from the Senate Floor Analysis of SB 2028:

JLSRC (Joint Legislative Sunset Review Committee) and DCA (Department of Consumer Affairs) Review of the Board for Geologists and Geophysicists: The Board of Registration for Geologists and Geophysicists (BRGG) was first reviewed by the JLSRC four years ago (1995-96). The JLSRC and DCA identified a number of issues and problem areas concerning this board. For example, the JLSRC noted that BRGG had never adopted any code of ethics for the profession, had a very low pass rate on its state-only examination for geologists, and because it is a state required examination, there was no comity or reciprocity for out-of-state geologists or geophysicists. In addition, the JLSRC made several findings with regard to the operation of the board, and found it deficient in a number of areas. The JLSRC and the DCA reached the conclusion that components of the current regulatory program did

not appear to provide protections to the consumer and preclude consumer harm. Because of these findings, the JLSRC and the DCA recommended to reconstitute the BRGG with new board members and change its composition, and recommended a number of other changes the BRGG should make to its licensing and enforcement programs. In November 1999, the BRGG was reviewed once again. It was found that the board had made vast improvements since its last review, and addressed and implemented almost all of the prior issues and recommendations raised by the JLSRC and the DCA. Because of these actions taken by the board, both the DCA and the JLSRC recommended continuation of the BRGG. There are still some minor issues and problem areas for the BRGG to deal with prior to their next review. They are reflected in the current recommendations of the JLSRC and the DCA (including a request to reduce the experience requirement for registration). Although no future sunset date and review was specified, it is the intent of the Legislature that another review occurs within four years unless otherwise specified. Based on the sunset dates specified in the bill, another review will occur by November 2003.

Elizabeth L. Mathieson, CEG • Managing Scientist • Exponent Failure Analysis Associates  
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# California Groundwater Management Manual Targeted for Reprinting

GRA would like to acknowledge the organizations and firms that have pledged their funds for reprinting the "California Groundwater Management" Manual. We are almost halfway to our target of \$18,000. GRA will be writing to firms requesting their contributions to the reprinting. If you do not receive a letter, but would like to contribute, please contact Harrison Phipps at (530)758-3656 or email [execdir@grac.org](mailto:execdir@grac.org). Thank you to those that have generously pledged funds:

List of donors toward second printing of Groundwater Guidance Manual (as of 5/27/00):

Jones & Stokes Associates . . . . .	\$500
United Water Conservation District	500
Law Offices of Hatch and Parent .	1000
McCormick, Kidman & Behrens, LLP . . . . .	500
State Water Resources Control Board . . . . .	1000
Santa Barbara Water Purveyors Agency . . . . .	500
SCS Engineers . . . . .	500
Santa Barbara County Dept. of Public Works . . . . .	500
Roscoe Moss Company . . . . .	500
Law Offices of Susan M. Trager . .	500
U.S. Environmental Protection Agency . . . . .	1000
Provost & Pritchard Engineering Group . . . . .	500
Hargis + Associates, Inc. . . . .	500
<b>TOTAL . . . . .</b>	<b>\$8000</b>

## Central Coast Branch Highlights

BY: TERRY FOREMAN, PRESIDENT AND  
MICHAEL BURKE, SECRETARY

The Central Coast Branch of GRA has recently undergone significant changes which have successfully renewed interest and participation amongst Central Coast Branch members. President Terry Foreman (CH2MHILL), with the help of Vice-President Stephanie Osler Hastings (Hatch and Parent), Secretary Michael Burke (Fugro West), and outgoing Treasurer Jennifer Harting (Tetra Tech), has implemented new ideas to promote interest in branch meetings and activities. Key to this is the establishment of regularly scheduled meeting dates (first Wednesday of each month) and a revised meeting format. Meetings are now held regularly, on the first Wednesday of each month, at the Santa Barbara law offices of Hatch and Parent. The meetings are informal, catered socials which require less of a time commitment than the previous full dinner affairs. The response, as evidenced by the increased attendance, has been positive.

Also key to the success of recent efforts to increase interest in branch activities has been the scheduling of engaging guest speakers. The March 2000 guest speaker was the 35<sup>th</sup> District Assembly Representative Hannah-Beth Jackson, who discussed California Proposition 13, The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act, and what this assembly bill meant for the GRA. In April, the speaker was Leah Walker with the California Department of Health Services, speaking on the implementation of the Drinking Water Source Assessment and Protection (DWSAP) Program. The May 2000 meeting was a facilitated discussion on MTBE, with the focus of establishing a Central Coast subcommittee to serve on a statewide committee at the directive of the Board of Directors, to formulate a unified position of the GRA on MTBE-related issues. The Central Coast Branch subcommittee includes Michael Burke (Fugro

West), Dan Detmer (United Water Conservation District), and Jim Steele (Tetra Tech). A framework for the Central Coast Branch position was developed through the discussion, which was facilitated by Branch President Terry Foreman.

Upcoming meetings also promise outstanding speakers. Dr. Donald R. Kendall, General Manager of the Calleguas Municipal Water District, will discuss the District's Las Posas Basin ASR Project. This project will increase the reliability of Calleguas' water supply and involves the installation of 30 new ASR wells. The Las Posas Basin Project is the largest ASR facility in California and has won many state-wide and national awards for innovative water resources management. In August 2000, Randy Hanson of the USGS, will give a presentation entitled "Simulation of Groundwater and Surface-water Flow in the Santa Clara-Calleguas Basin, Looking at the Past and Future". "Randy is bright and a talented researcher" according to Board member (and his cousin) Brian Lewis.

One of the goals of the Central Coast Branch is to keep members apprised of upcoming events throughout the water world at large. A partial list includes the following:

- 🔹 **July 20**  
AWA Annual Barbecue, Lake Casitas.
- 🔹 **Aug. 24 – 25**  
7th Annual Southern California Urban Water Conference, San Diego.
- 🔹 **Sept. 2**  
Sustainable Water Use: Industry, Environment & Idealism (Water Reuse)
- 🔹 **Sept. 12-15**  
Sustainable Water Use: Industry, Environment & Idealism (Water Reuse)
- 🔹 **Sept. 19-26**  
AEG•GRA Joint Annual Meeting, Linking Tradition and Innovation, San Jose, CA

🔹 **Dec. 14-15**  
Assoc. of Ground Water Scientists and Engineers, Annual Meeting and Conference, Las Vegas, Nevada

🔹 **Dec. 15-19**  
AGU Fall Meeting, San Francisco, CA  
To learn more about the Central Coast Branch visit the website, or contact the branch secretary at the following address:

Secretary - Michael Burke  
Fugro West, Inc.  
(805) 650-7000

## Letter to the Editor

June 1, 2000

An Open Letter to GRA's Central Coast Branch:

Kudos to the Central Coast Branch on your strategic plan for rejuvenating that geographic pillar of the Groundwater Resources Association (reference "Central Coast Branch Highlights" in the last issue of HydroVisions). As a founding officer of the Sacramento Branch who continues to be active today, I more than many can relate to what it takes to get a Branch up and running, and to keep it active and solvent. To the Central Coast Branch members and particularly to the Branch's leadership, please rest assured that your fellow GRA members' thoughts of support and success are with you during your period of revitalization!

Sincerely,

David Von Aspern

## Sacramento Branch Highlights

BY BARBARA HEINSCH  
PRESIDENT

Sacramento Chapter activities included three meetings. In March, Walt W. McNab, Jr., Ph.D. of Lawrence Livermore National Laboratory presented on *Understanding Chlorinated Hydrocarbon Plume Behavior From A Population Perspective*. Mr. McNab summarized some recent findings from the LLNL analysis of chlorinated hydrocarbon groundwater investigation and remediation case histories. The review of chlorinated plume data is a follow-up study to the 1995 analysis of UST case histories.

In April, Murray Einarson's and Doug Mackay's presentation was on predicting MTBE concentrations in water supply wells to define potential risk to California's drinking water resources. Mr. Einarson is Principle Geologist with Conor Pacific/EFW in Palo Alto, California and Mr. Mackay is a Research Associate Professor at the University of Waterloo. Mr. Einarson described a mass balance approach for quantifying the dilution of contaminants that occur in water supply wells. The ap-

proach uses detailed plume characterization from multi-level monitoring well technology. With detailed plume data, he developed conservative estimates of maximum contaminant concentrations that could appear in supply wells that capture plumes emanating from single or multiple release sites.

In May, James W. Borchers and Devin L. Galloway, of the U. S. Geological Survey, Sacramento, California presented on *Application of Non-Traditional Tools to Assess Land Subsidence: Down-Well Television in the Sacramento Valley and Interferometric Synthetic Aperture Radar (InSAR) in the Western USA*. Mr. Borchers presented results from a study of 317 down-well videotapes that were examined to determine if they contained information that could extend the knowledge base on subsidence in the valley. The videotapes showed that 81 wells had been damaged by subsidence-induced vertical compression in the southwestern part of the Sacramento Valley. This area, includes part of Solano, Yolo, and Colusa Counties, is a regional trough of subsidence caused by ground-water extraction. Mr. Borchers presented pictures of broken casings from wells that were vertically compressed by more than 3 feet, an amount similar to

the maximum known subsidence in the area as determined by leveling surveys made between 1949 and 1988. Mr. Galloway explained the use of a non-traditional tool, interferometric synthetic aperture radar (InSAR) that is a powerful new technique that uses radar signals from Earth orbiting satellites to measure deformation of the Earth's crust at an unprecedented level of spatial detail and high degree of measurement resolution. Recent applications of InSAR in Santa Clara Valley, California and Las Vegas Valley, Nevada demonstrate the mapping capabilities of InSAR and reveal seasonal and longer-term patterns of subsidence and uplift. Radar data for InSAR are available over much of the western USA from 1992 to present.

Future meeting speakers for the year include Carl Hauge of the California Department of Water Resources and Anthony Saracino to speak on conjunctive groundwater use, and David Sederquist of Youngdahl and Associates to tell us about on-site wastewater disposal. 💧

## Southern California Branch Highlights

BY PAUL PARMENTIER  
PRESIDENT

**T**he Southern California Branch has been active and we have an exciting and varied program for the rest of 2000. Our program includes bi-monthly evening meetings (typically the third Wednesday of each odd month). In January, we had a presentation on well rehabilitation methods by Edd Schoffield of US Filter. In March, Ms. Rebecca Chou and Ms. Leslie Alford of the Los Angeles and Santa Ana Regional Water Quality Control Boards gave a well-attended over-

view of current and upcoming regulatory trends. Our members learned first hand of the upcoming MtBE guidelines, strict enforcement brought along by SB 709, new surface water regulatory scrutiny...and employment opportunities at the RWQCBs!

The Southern California Branch is also co-sponsoring events with other organizations, including a phytoremediation seminar in early April, and a May 11 MtBE focussed 1/2 day seminar with lead speakers from the State Water Resources Control Board (SWRCB) and City of Santa Monica. The Southern Branch also selected lead technical members to discuss with the SWRCB the Final Draft Guidelines on MtBE. This GRA group of senior technical re-

sources will evaluate if GRA should propose an official response to the guidelines.

Last year's 1/2 day remediation seminar, which covered new bioremediation and in-situ oxidation technologies, was well received and we had numerous requests for this event to be repeated annually. We have tentatively scheduled this seminar for October 2000.

Our July bi-monthly meeting will include a field trip: we will meet in late afternoon in the field to "feel" some groundwater and touch some equipment, and later meet for dinner.

Our Branch has an enthusiastic team with varied interests, and we are looking for active participation from our Southern California members. 💧



## S.F. Branch Announcements

BY J.C. ISHAM  
SECRETARY

On July 12th at our bi-monthly meeting we will feature Jim Crowley, Engineering Unit Manager of Santa Clara Valley Water District's Underground Storage Tank Program. His presentation will be "An Evaluation of MtBE Occurrence at Fuel Leak Sites with Operating Gasoline USTs." The meeting will be held at the Old Spaghetti Factory, Oakland beginning with a social hour at 6:00.

Our May 17<sup>th</sup> meeting consisted of a workshop entitled "Litigation Support and Expert Witness." Approximately 50 members attended the workshop. The workshop was presented by:

James Buen, Esq., Farrella, Braun & Martell LLP

Thomas Johnson, C. Hg., LFR-RECON

The purpose of the workshop was to provide practical advice to technical professionals who are likely to find themselves involved in the litigation process. As the environmental industry has matured, many

groundwater professionals have become involved in the litigation process. Many of us have performed technical projects that have later become involved in litigation, or we are asked to provide a technical opinion for cases that are already in the litigation process. The purpose of the workshop was to provide practical advice to technical professionals who are likely to find themselves involved in the litigation process. The workshop included the following components:

- 💧 An overview of the litigation process
- 💧 Tips for an expert witness
- 💧 How to avoid pitfalls in the courtroom
- 💧 The pitfalls of electronic communications
- 💧 The trial process
- 💧 What you should and should not write down
- 💧 Advice on document retention
- 💧 Case Histories

The workshop was divided into the following three parts:

1. The Truth, The Whole Truth, and Nothing But The Truth by James Bruen
2. Litigation in Paradise: the Case of the Disconnected UST by Thomas Johnson

3. Video Presentation: "Write Now, Pay Later" and "Buried Alive"

Mr. Bruen's presentation covered the following subjects:

- 💧 Steps in the Civil Litigation Process including the pleading stage, the pretrial stage, the trial stage, and the post-trial stage.
- 💧 Litigation Expert Witness Services, including initial project steps/issues, potential conflicts, settlement negotiations, subpoena for percipient witness deposition, deposition testimony (percipient witness and expert witness guidelines), and trial testimony (direct and cross-examination guidelines)

Mr. Johnson's presentation covered the role he had played as the expert witness for the current property owners against past owners in a very interesting case on the Island of Oahu. He described the history and background of a UST case including the hydrogeologic investigation, the tank pulling process, and the trial. Mr. Johnson made the very important point that the expert witness should review every piece of information in the record. He presented a situation of how a competent understanding of the site hydrogeology and all of the crucial pieces of evidence brought a trial verdict favorable to his client. Mr. Johnson also lamented how he was forced to spend a month in paradise (Oahu on expenses) as a result of some interesting circumstances that occurred during the trial.

The video presentations centered on what not to write down and what documentation not to save. The videos really highlighted some of the pitfalls that we as professionals should be very careful about. The entire workshop was very informative and considered a valuable learning lesson on this crucial aspect of our business. Even David Von Aspern of the Sacramento Branch rode the Capitol Corridor train to attend this special S.F. Branch meeting (David likes trains and has always wanted to visit another Branch meeting—yes, he does have a life!)💧

**enviro-tech**  
**pick up from page 10**  
**(fall)**

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## State Agency is Offering Examinations

The State of California, Department of Toxic Substances Control (DTSC), is examining & hiring senior level geologists for challenging technical and supervisory assignments. We are looking for senior level geologists with skills/knowledge in GIS, modeling, geophysics, bioremediation, faulting/seismic ground motion evaluations and personnel supervision. Employment with DTSC provides the opportunity to solve some of the most challenging site investigation and remediation problems facing the State of California. DTSC promotes professional growth and provides ample opportunities for technical or managerial training. Employment with the State of California provides excellent benefits such as a conventional retirement program, a deferred compensation program; health, vision, and dental insurance programs; and competitive salaries. The FINAL filing date for the Senior Hazardous Substances Engineering Geologist (HSEG) and Supervising HSEG I (1st line supervisor) is July 7, 2000. If you have any questions about employment opportunities as a senior or supervising geologist with DTSC, please contact Mike Sorensen at [msorensen@DTSC.CA.GOV](mailto:msorensen@DTSC.CA.GOV) or call (916)323-2990. Please visit our web page at [www.dtsc.ca.gov](http://www.dtsc.ca.gov) for information about DTSC.

DTSC is also examining & hiring Public Participation Specialists (Community Relations), Engineers, Industrial Hygienists, and Environmental Scientists. Contact: Sacramento (916) 322-2480, Los Angeles (714) 484-5335, or email: [tmelende@dtsc.ca.gov](mailto:tmelende@dtsc.ca.gov) or mail: P.O. Box 806, 400 P Street, Room 4490, Sacramento, CA 95812-0806. All of the classes listed above have continuous filing. ♠

# Positions Available

## Hydrogeologist Positions

Various California Locations • Entry To Senior Level

### Environmental and Water Resources Emphasis

CH2M Hill has a number of openings for hydrogeologists distributed throughout our California-office locations. These openings range from entry-level staff to senior-level hydrogeologists with 10+ years of experience. These positions vary in the required skill sets; however, candidates must possess quantitative hydrogeologic skills.

### Environmental Emphasis

Individuals will work on projects involving contaminant hydrogeology, such as site characterization and remediation of contaminated groundwater and soils, and hazardous waste and solid waste sites. Clients include federal and state government agencies, local water agencies, cities, and private companies and corporations. Specific responsibilities will include: participation in field investigations or remedial actions (including subcontracting and management of drilling and surveying subcontractors, well logging, aquifer testing); analysis of field data, aquifer tests, and water quality and soil data; evaluation of contaminant fate and transport processes, including natural attenuation; water budget analysis; groundwater modeling; development of alternatives for remedial action; cost estimating; and work plan and report preparation.

### Water Resources Emphasis

Individuals will work on projects involving innovative water resources development and management for water districts, private and publicly-held water companies, and agricultural clients. Specific responsibilities may include the following: conducting field investigations of soil infiltration characteristics, aquifer properties, and groundwater conditions and quality; conducting demonstration projects for artificial recharge of surface water and recycled water; developing and managing databases of hydrogeologic and groundwater data; making quantitative assessments, including groundwater flow and transport modeling, of groundwater basin conditions for water supply, conjunctive use, and water banking operations; designing surface and well recharge facilities; and preparing reports and presentations for technical and non-technical audiences.

Computer skills are essential and candidates must be able to communicate in an effective manner, both verbally and in writing. A minimum of a Master's degree is desired. Desired majors include Hydrogeology/Hydrology or Geology/Environmental Engineering/Civil Engineering with a strong emphasis in Hydrogeology and a minimum GPA of 3.2 on 4.0 scale. For more information about CH2M HILL go to [www.ch2m.com](http://www.ch2m.com). Interested persons should send resumes to Holly Meyer, CH2M HILL, 100 Inverness Terrace East, Englewood, Colorado 80112-5304 or e-mail at [hmeyer@ch2m.com](mailto:hmeyer@ch2m.com).

## Conor Pacific

One of North America's Fastest Growing Firms Providing Complete Environmental solutions and products- has immediate openings for an environmental engineer and a hydrogeologist in its Palo Alto office. We are looking for candidates with 7+ years of professional experience (California professional registration required) with exceptional skills in the development, design, and implementation of innovative soil and groundwater remediation systems. We have a diverse mix of clients ranging from small, private industrial concerns to large, multi-national solid waste firms with a corresponding mix of remedial engineering requirements. We need resourceful and talented individuals to help us provide creative and cost-effective solutions. Interested candidates should send a letter of interest and resume to:

Ms. Martha Watson  
Conor Pacific  
2650 East Bayshore Road  
Palo Alto, California 94303

[mjw@efwi.com](mailto:mjw@efwi.com)  
(650)843-3828x224  
Fax (650)843-3815

Conor Pacific is publicly traded on the Toronto Stock Exchange under the symbol CPA.

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# Positions Available

## Nominees Sought for Officers and Board Members

The GRA Board of Directors is accepting nominees for the position of President, Vice-President, Secretary, and Treasurer for the 2001 calendar year. Officers are expected to make the time commitment necessary to fulfill their duties as well as attend quarterly Board meetings. Some travel costs to attend Board meetings are reimbursed. Nominations are being accepted until the vote for officers at the November Board meeting scheduled for November 4, 2000 at Wallace-Kuhl Associates in West Sacramento, California.

## Board of Directors

Three positions are subject to election on the Board of Directors. Every year three board positions are up for election. Board members are expected to make the time commitment necessary to fulfill their duties as well as attend quarterly Board meetings. Some travel costs to attend Board meetings are reimbursed. If there is a quorum at the Annual Meeting, the election may be held at the Annual Meeting September 24 during the business meeting.

All nominations may be made by contacting GRA executive director, Harrison Phipps at (530) 758-3656 or email [execdir@grac.org](mailto:execdir@grac.org).

## Don't forget to register early for the AEG • GRA 9th Annual Meeting

Details Inside

*State of California, Department of Toxics Substances Control, Exam is slated. Filing deadlines are nearing.*

*See details on page 22.*

*Please confirm that your address is correct. If you see an error you may now update your information electronically on our web page [www.grac.org](http://www.grac.org).*

*Thank you for your help.*

# Dates & Details

## 2000 BOARD OF DIRECTORS' MEETING DATES

ALL MEMBERS WELCOME

August 12 .....	Fast Tek
Saturday	Point Richmond, CA
9th Annual Meeting .....	September 19-26, 2000
Thursday-Sunday	DoubleTree Hotel, San Jose Airport
November 4 .....	Wallace Kuhl & Associates
Saturday	West Sacramento, CA



GROUNDWATER RESOURCES ASSOCIATION  
OF CALIFORNIA

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