

HYDRO VISIONS

Volume 9, No. 4

GROUNDWATER RESOURCES ASSOCIATION
OF CALIFORNIA

Winter 2000

AEG • GRA 2000 Annual Meeting Summary

BY DAVID W. ABBOTT

The Groundwater Resources Association of California (GRA) 9th Annual Meeting was conducted in concert with the Association of Engineering Geologists (AEG) 43rd Annual Meeting. The GRA Board of Directors appreciates and acknowledges all participants including GRA members, paper presenters, supporters, volunteers, sponsors, and exhibitors who attended the Annual Meeting to make it a success. You are what make these events professionally and fiscally successful. The multi-disciplined and multi-activity event calendar was held between September 19 and 26, 2000 in San Jose, California. Numerous field trips and short classes and workshops were offered pre- and post-technical sessions. A full three days of six onsite concurrent symposia, technical sessions, and activities were conducted between Friday morning and Sunday afternoon. This number of concurrent sessions allowed for a variety of geologic, engineering, and hydrogeologic topics to be discussed and presented at the meeting.

GRA arranged and hosted three of the 12 symposia. Congratulations go to the GRA symposia chairs for a well attended and interesting symposia agenda. In addition,

GRA chaired three technical sessions with a diversity of interesting papers and topics submitted to the AEG•GRA planning committee. Prior to the meeting, several single- and multiple-day field trips were offered ranging from the Yosemite field trip led by Art Arnold to the Northern San Andreas Fault System and Sonoma County Slope Stability field trip led by James Valentine. GRA thanks the guest speakers who participated on all the field trips. An illustrated field trip guidebook (edited by Leonardo Alvarez) was published by AEG•GRA and is available through AEG with all field trip maps and explanation of stops. This is a useful California reference book for those who are new to the area and for those who want to revisit parts of northern California geology.

The AEG•GRA Annual Meeting opened on Thursday evening with an icebreaker sponsored by the Exhibitors. Fifty-six exhibitors participated in the AEG•GRA Annual Meeting. For those of you who did not attend the icebreaker, a self-sufficient, semi-intelligent, actually unassisted roving robot (named Zepron; see the Atlas Robotics website) was our cordial “co-host” and greeted attendees with their correct name and knew something about the field of geology. The robot was provided to the Annual Meeting courtesy of UPP Geotechnology, Inc. In addition, throughout the Annual Meeting, we had several authors selling and signing their recently published books, including Sue McClurg and Rita Schmidt Sudman of the Water Education Foundation (WEF) presenting “Water & the Shaping of California” and Steven E. Ingebritsen and

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GRA By-law Amendment

As the Groundwater Resources Association approaches its 10th year of excellence in promoting resource management that protects and improves groundwater, the Board of Directors has elected to ask the GRA membership to vote on an amendment to expand the Board to a maximum of 15 members (currently 11). The description of the amendment and a voting ballot is located on the back page of this newsletter.

While the Association currently has a strong Board of Directors that represents cross-sections of the membership, creating additional Board seats will provide an opportunity for more members and industry representatives to participate in carrying out the organization's strategic vision.

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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

In the GRA tradition, the results of the State Officer elections are that the Year 2000 slate was re-elected to their second term:

President: Timothy K. Parker, California Division of Mines & Geology

Vice President: Tony Ward, Montgomery Watson

Secretary: Jim Carter, EMAX Labs

Treasurer: David VonAspern, Wallace-Kuhl & Associates

We all look forward for continuing to serve the Association in our second successful year as State Officers.

We also are very pleased to announce we have selected a new Executive Director: Kathy Snelson, a principal of the association management practice at Nossaman, Guthner, Knox & Elliott, LLP. See page 3 to hear more about our new Executive Director.

Our 2000 Annual Meeting was a success. We had over 700 attendees and 55 Exhibitors in San Jose. This year was the second time we have jointly conducted our annual meeting with the Association of Engineering Geologists (last time was in 1995). For more information on the Annual Meeting, see Page 1. I want to personally thank all those who helped with this tremendous effort - without our volunteers (and AEG's), this would not have been possible.

GRA paid tributes at the Annual Meeting including:

Joseph J. Birman was presented with the GRA Lifetime Achievement Award for 2000.

Board of Directors of the Chino Basin Watermaster received the Year 2000 Kevin J. Neese Award.

Several Branch Members received awards for their support of the GRA over the past years.

We've had a successful Year in 2000. Below is a summary of some of our accomplishments

thus far:

Continued services to GRA members

- ▲ Successful Branch Meetings
- ▲ Produced four issues of HydroVisions
- ▲ Executive director services
- ▲ Membership database manager

Fulfill our mission of protecting and improving groundwater through education and technical leadership

- ▲ Held 1 successful seminar
- ▲ MTBE Committee work and Position Paper/support of legislation
- ▲ Continued upgrade of our web site
- ▲ Helped coordinate a successful 9th Annual Meeting
- ▲ Co-sponsored several groundwater related conferences

Continued the process of producing a second edition of the California Groundwater Management book

Participated and provided input to the California Council of Geoscience Organizations

Administration and Program Development

- ▲ Developed policies to assist the Board in being effective and efficient
- ▲ Developed informational binders for GRA Board Members and Branch Presidents
- ▲ Began planning for the Year 2001 joint GRA Annual Meeting/Biennial Groundwater Conference in Sacramento
- ▲ Presented the Kevin Neese Excellence in Groundwater Award
- ▲ Presented Annual Meeting Awards
- ▲ Presented the Lifetime Achievement Award

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Annual Meeting Summary

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Ward E. Sanford of the USGS presenting "Groundwater in Geologic Processes". Both books are highly recommended by this writer.

On Friday morning, Tim Parker (GRA President) and Art Stuckey (AEG President) officially welcomed attendees to the meeting. Friday afternoon concurrent with five other symposia/technical sessions, Matt Zidar chaired Conjunctive Use/Groundwater Banking Symposia. No formal Annual Meeting activities were planned for Friday evening. However, I was one of a group of several GRA members who went to a local restaurant to unwind, to discuss the day's activities, to form new friendships, and to contemplate next year's Annual Meeting agenda. Yes, GRA is already in the planning stages for the 2001 Annual Meeting.

Saturday was replete with four concurrent sessions in the morning and five in the afternoon. GRA hosted the Groundwater Investigations Technical Session (chaired by Martin Steinpress) in the morning and the Environmental Forensics/Forensics Geochemistry Symposia organized and chaired by Bill Motzer in the afternoon. In addition, sixteen poster sessions were exhibited throughout the meeting. I especially liked the poster session "Geology in Advertising" by Corinne Stewart. I wonder how much time Corinne spent on consuming the products (i.e., Black Rock Beer or Serpentine Wine Cellars) to get the labels and contemplating the thoughtful descriptions.

On Saturday evening, a joint AEG•GRA Annual Banquet was attended by several hundred people. Tim Parker presented the GRA Lifetime Achievement Award to Joe Birman (see article, page 15). Joe, as usual, provided us with an entertaining, enthusiastic, interesting, thought provoking, and philosophical oral essay about sports, geology, and groundwater in that order. Tim Parker presented the Kevin J. Neese Award to the Board of Directors of the Chino Basin Watermaster. Dr. Patrick J. King, Chino Basin Watermaster Ontario representative graciously accepted the award on behalf of the Watermaster.

Roy Shlemon was awarded an Honary Member by AEG. With the exception of a concurrent boisterous bridal party in the adjacent meeting room at the facility, a great time was afforded to all that attended the banquet. AEG•GRA did not plan for the battle of the bands competition between the mariachi band and the AEG•GRA sponsored four string quartet; otherwise the AEG•GRA planning committee would have tried to get a popular electric, fuzz-and feed-back amplifiable rock n' roll band. Notwithstanding, the hotel has monetarily compensated AEG•GRA for this annoying inconvenience.

Six concurrent sessions were scheduled on Sunday morning and afternoon. GRA chaired the Environmental Investigation and Cleanup Technical Sessions in the morning and Jim Jacobs coordinated and chaired the Innovative Environmental Technologies Symposia. During Sunday lunch, GRA held its annual business meeting and Dr. Judith Connor from the Monterey Bay Aquarium Research Institute (MBARI) provided the lunch guests with photographs and videos of strange and interesting deep sea creatures rarely seen in their native environment. (Note: On October 2, 2000 the US Post Office issued a small stamp pane of some of these undersea creatures.) The technical and

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Dr Judith Conner, Monterey Bay Aquarium Research Institute receives a "high tech" clipboard from President Tim Parker.



GRA Names New Executive Director

The Groundwater Resources Association has selected Kathy Snelson to be its Executive Director. Snelson, who began her tenure in mid-September, will work with the Board of Directors, Branch leaders and membership to achieve GRA's mission by developing new programs, increasing public outreach and initiating new strategic alliances.

As a principal of the association management practice at Nossaman, Guthner, Knox & Elliott, LLP, Snelson has served in executive and director level positions with the WaterReuse Association, the WaterReuse Foundation, the American Membrane Technology Association, the Automotive Repair Coalition and the California Legislative Conference on Interior Design. With these non-profit organizations, she has proved successful at developing and executing programs that have made it possible for them to consistently fulfill their missions. Snelson's expertise includes strategic planning, fund development, public outreach, grassroots advocacy and membership development.

Snelson replaces Harrison Phipps, who served as executive director for the past three years. Phipps resigned to focus on his growing consulting work with Saracino-Kirby.

Kathy can be contacted at the new headquarters for GRA, 915 L Street, Suite 1000, Sacramento, CA 95814, 916/446-3626, 916/442-0382 (fax) or execdir@grac.org.

2000 AEG GRA Annual Meeting

Summary

Continued from page 4

symposia sessions of the AEG•GRA Annual meeting were officially over on Sunday afternoon. However, GRA sponsored the Silicon Valley Groundwater Field Trip led by Seena Hoose and Tom Iwamura, which was attended by about 30 people on Monday.

As Liaison Chair between GRA and AEG, I would like to personally thank the AEG•GRA planning committee, especially Bob Tepel (General Chair) and Julie Keaton (AEG Director of Meetings and Education) for their outstanding work and guidance. In addition, I want to acknowledge the hard work of the Management group for the Annual Meeting: Dennis Maslonkowski, Technical Program; Frank Kresse, Field Trips; John Williams, Short Courses; Charles Snell, Symposia; Gretchen Mora, Sponsors; Frank Groffie, Teachers Workshop; Corinne Stewart, Student Coordination; Leonardo Alvarez, Field Trip Guidebook Editor; Betsy Mathieson, Plenary Sessions Chair; Gary Pischke, Poster Session Manager; and Alice Tepel and Linda Upp, Co-Manager of the spouse-Guest Program. I served as the GRA Liaison to the Annual meeting and was part of the Management team.

By-law Amendment

Continued from page 1

GRA has a sound record of accomplishments, but like any other association, it is constantly evolving and redefining what it will become.

At the center of GRA's future success lies the necessity to reinforce an enduring framework for governance and operating the Association. The Board envisions that the expansion will be a step toward supporting an organizational culture that continues to foster mutual respect and expectations, and shared accountability.

Please take the time to review the proposed GRA By-law amendment and forward your ballot by December 31, 2000 to GRA, 916/442-0382 (fax) or mail to 915 L Street, Suite 1000, Sacramento, CA 95814. Should you have any questions, please contact Kathy Snelson, GRA's Executive Director, at the 916/446-3626 or by email at execdir@grac.org.

I would also like to take this opportunity to thank the Symposia Chairs, Co-Chairs, and Leaders. The three symposia GRA offered to the conference would not have occurred without their hard and dedicated work. I would also like to thank GRA members and the Board of Directors for their support in planning the meeting.

A co-sponsored meeting such as this one is a win-win situation for both GRA and AEG. GRA brings to AEG specific and focused expertise in groundwater, while AEG brings to the table a variety of interesting engineering and geologic problems ultimately related to and potentially solved by groundwater professionals. It is certainly advantageous to expose GRA membership to other engineering aspects of groundwater ranging from land subsidence, to the role groundwater plays in slope failures, and to the incorrect definition of faults based on hydrogeologic discontinuities; and AEG members are exposed to the focused intricacies and specialized field of groundwater.

Have a good year. I hope to see you next fall in Sacramento for GRA's 10th Annual Meeting co-sponsored with the University of California Water Resources Center, State Department of Water Resources, Water Education Foundation, and the State Water Resources Control Board. ♪

President's Message

Continued from page 2

We are in the midst of planning activities for next year. These activities include:

Board Meetings

Retreat/Board Meeting, North San Francisco Bay Area, January 14/15, 2001.

Board Meeting, Montgomery-Watson, Pasadena, April 7, 2001.

Board Meeting, contact Brian Lewis, Point Richmond, August 11, 2001.

Board Meeting, Wallace-Kuhl, Sacramento, November 3, 2001.

Seminars\

New Groundwater Contamination Series, Hexavalent Chromium Symposium, Glendale Hilton, January 25, 2001

Environmental Statistics, Location to be determined, spring or summer 2001

Groundwater Modeling, Location to be determined, fall 2001

Annual Meeting

Joint with Biennial Groundwater Conference, fall 2001, Sacramento

Special Projects

Second Edition of the California Groundwater Management Handbook

I would like to thank all our Directors, Executive Officers, Branch Officers, all the other volunteers and membership for your efforts, contributions and support through the Year 2000. I would especially like to thank Anthony Saracino for his tenure as a GRA founding board member and past president. After serving on the board for nine years he has decided not to run for re-election to the board and to focus his time on his company he co-founded last year. It is through the efforts of all that GRA continues to be successful in the implementation of our mission of dedication to resource management that protects and improves groundwater through education and technical leadership.

Finally, have a wonderful Holiday Season this year! Merry Christmas and Happy New Year to all, and I am looking forward to seeing all of you at our various GRA functions next year. ♪

Water Transfers and Effect on Groundwater

BY MARGARET H. IRISH, HATCH AND PARENT

The State Water Resource Control Board (SWRCB) has formed a workgroup to review water transfer issues in California. One of the proposed tasks for the workgroup is providing the SWRCB with ideas on how to resolve water transfer related issues outside the authority of the SWRCB. Of particular concern is dealing with those issues that arise with groundwater.

A subgroup on groundwater transfers has been formed to look at the different types of groundwater transfers including: use of groundwater in lieu of surface water rights that are transferred, transfer of banked groundwater, and direct transfer of groundwater. The mission of the Groundwater Transfer subgroup is “[t]o develop recommendations that facilitate and improve reliability and certainty of groundwater transfers, including direct transfers of groundwater, use of groundwater in lieu of transferred surface water, and transfer of banked groundwater.”

The Groundwater Transfer Subgroup is focusing on the definition of groundwater especially differentiating between percolating groundwater and subsurface flow, the definition of injury to water user, application of Water Code transfer provisions to in-lieu transfers, definition of transferable water, defining banked groundwater as a beneficial use, and water rights with respect to banked groundwater.

Interested persons may contact Jerry Johns at the SWRCB.

Well Wizard Bladder Pumps Receive EPA's ETV Verification

The U.S. Environmental Protection Agency (EPA) recently completed an Environmental Technology Verification (ETV) evaluation of the Well Wizard® Dedicated Ground-Water Sampling System manufactured by QED Environmental Systems, Inc. The verification statement shows that the Well Wizard System produced results for six target volatile organic compounds (VOCs) that did not vary with the type of compound, concentration or sampler depth, and found the system to be “a widely versatile sampling device and applicable for sampling the types of VOCs likely to be encountered under actual field conditions.”

The goal of the ETV is to accelerate the acceptance and use of innovative and cost-effective environmental technologies. The Site Characterization and Monitoring Technologies Pilot, one of 12 technology areas under ETV, is administered by the EPA's National Exposure Research Laboratory in Las Vegas, Nevada. Sandia National Laboratories, a contractor in the ETV program, collaborated with personnel from the US Geological Survey (USGS) to conduct the verification of sampling technologies at the USGS Hydrological Instrumentation Facility located in the NASA Stennis Space Center facilities in Mississippi in August 1999.

The verification test design incorporated the use of a 5-inch diameter, 100-foot stand pipe at the USGS facility. The standpipe, serving as an “above ground” well, was filled with tap water spiked with various concentrations of six target VOCs, chosen to represent the range of volatility likely to be encountered in normal use. The standpipe trials were supplemented with field trials at groundwater monitoring wells in the vicinity of VOC-contaminated groundwater at the NASA Stennis facility. All technology and reference samples were analyzed by two identical field-portable gas

chromatograph-mass spectrometer (GC/MS) systems that were located at the test site during the verification tests. Test results showed that precision differences between the Well Wizard and reference samples were statistically insignificant at the 95% confidence level in 22 of 24 cases.

The QED Well Wizard System used for the trials consisted of a pneumatic bladder pump with an internal Teflon® bladder and a stainless steel pump body. These pumps use pressurized air or gas to gently push groundwater to the surface through flexible plastic tubing, typically lined with Teflon. The positive-displacement design of the bladder pumps prevents volatilization, aeration or agitation of the sample to provide the highest degree of sampling accuracy and precision of any commercially available sampling device. The bladder pumps are operated at the surface by a small, lightweight electronic controller that allows simple flow rate adjustment using up/down arrow keys. Lightweight portable compressors or gas cylinders power the system. For low-flow MicroPurge® sampling applications, the controls can be combined with water level meter for drawdown control and an in-line flow cell analyzer to monitor purging indicator parameters for automatic identification of completed purging.

QED offers a complete line of dedicated and portable bladder pumps and associated controls. All Well Wizard pumps come supplied from the Ann Arbor, Michigan factory in sealed packaging and are laboratory certified analyte free before leaving the factory. For details contact QED Environmental Systems, Inc. at 1-800-624-2026, or visit their Web site at www.micropurge.com. The full EPA ETV report on the Well Wizard System evaluation is available on the ETV Web site at www.epa.gov/etv (EPA publication number EPA/600/R-00/062, August 2000).

Year 2000 Special GRA Awards of Tribute

Annual Meeting

Bob Tepel - Annual Meeting General Chair - Made an outstanding for GRA through his annual meeting efforts.

Dennis Maslonkowski - Annual Meeting Technical Program Chair - Made an outstanding contribution for GRA through his annual meeting efforts.

Departing Executives

Anthony Saracino - Board Member/Founder/Past President - for significant contributions to help promote and grow the organization.

Harrison Phipps - Executive Director GRA retired - for his past contributions of time and effort as Executive Director.

HydroVisions

Floyd Flood - for his continued efforts as HydroVisions Editor.

Sacramento Branch

David Sederquist - for continued support of the Sacramento Branch for his continuous support of GRA's mission and active participation within the association.

G. Fred Lee - for continued support of the Sacramento Branch for his continuous support of GRA's mission and active participation within the association.

Jim Parsons - for continued support of the Sacramento Branch for his continuous support of GRA's mission and active participation within the association.

Roy Kroll - for continued support of the Sacramento Branch and for his continuous support of GRA's mission and active participation within the association.

San Francisco Bay Area Branch

Cliff Davenport - past president of the San Francisco Bay Area Branch - significant contribution by starting the process of growing a satellite branch in San Jose.

Jim Ulrich - another avid sustainable volunteer - has support GRA on a number of things including past annual meetings - and more recently he has been in the role of Technical Chair for the San Francisco Bay Area Branch and helping grow the satellite presence in San Jose.


South Coast Branch/Board Member

Scott Slater - continues to make a significant contribution to the organization through legislative efforts, contributions of time or projects such as the second edition to the California Groundwater Manual, and contributions in general to the industry.

Stephanie Osler Hastings - Vice President, Central Coast Branch - for significant efforts to sustain and grow the Branch.

Terry Foreman - President, Central Coast Branch - for significant efforts to sustain and grow the Branch.

Southern California Branch

Robert Roscuito - treasurer for the Southern California Branch, and has also been the silent but effective organizer of the logistics (hotel, meals, audio-visual, etc) for our meetings in Southern California. He takes money from our members with a smile, keeps us fed, and keeps our finances straight! 



Cliff Davenport, left, receives an award from President Parker.

Envirotech
pick up from

Kevin J. Neese Award:

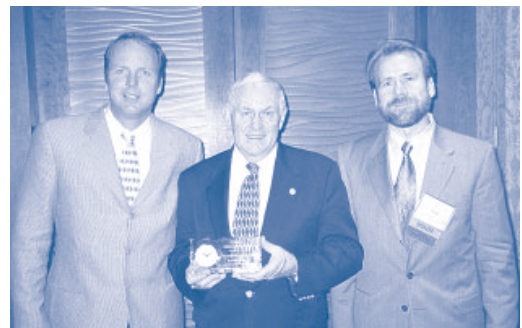
Last year, the GRA Board established an award in the name of Kevin J. Neese, former GRA Board Member and past president of the Central Coast Branch. Kevin passed away last year after a short illness at the age of 39. Kevin was a geologist first, having received both undergraduate and a master's degree in geology before heading off to law school.

After law school Kevin joined Hatch and Parent as a member of the California Bar and thereafter, combined his technical training as a geologist with his legal education. Besides practicing law, Kevin taught courses and seminars in educational programs regarding groundwater and groundwater management and was one of the authors of California Groundwater Management, first published by GRA in 1997.

Kevin always maintained a passionate pursuit of excellence. His open discourse of technical and legal issues led to a better understanding of a problem and a higher likelihood of problem solution. The GRA Board felt that his conduct coupled with his deep concern and interest in furthering the understanding, development, protection and management of groundwater resources merited the concept of the annual award.

Accordingly, the Kevin J. Neese Award is recognizes a significant accomplishment by a person or entity within the most recent 12-month period that fosters the understanding, development, protection and management of groundwater.

In 1999, the Kevin J. Neese Award was presented to Governor Gray Davis for his important work in addressing MtBE. This year, the GRA Board of Directors is pleased to announce that this year's recipient is the Board of Directors of the Chino Basin Watermaster.



Board member, Scott Slater, left, and Tim Parker, right, flank Dr. Patrick J. King as he receives the "Kevin J. Neese Award" on behalf of the Board of Directors of the Chino Basin Watermaster.

Explanation of Chino Basin.

The Chino Basin is a large groundwater basin located in the heart of Southern California and in the middle of the Metropolitan Water District Service territory. The groundwater within the basin supports more than a million people and a billion-dollar economy that is frequently called the "Inland Empire".

Increasing groundwater overdraft conditions lead to the adjudication of the Chino Basin in 1978. A Watermaster was empowered to supervise Basin activities. However, between 1978 and 1997, conflicts among urban users and between agriculture and industry led to a legal stalemate and a continuing inability to develop an optimum basin management program. In the interim groundwater conditions throughout the basin had become substantially degraded. Clean-up and required infrastructure costs were estimated to be in excess of \$200,000,000!

Frustrated with the lack of progress by the parties, the trial court Judge, Michael J. Gunn appointed a new 9-member board to oversee Watermaster's role in developing an optimum basin management plan (OBMP). At a time when the absence of leadership could have lead to a further degradation of groundwater supplies and an irreparable loss of a valuable resource, the Watermaster Board demonstrated great leadership.

On schedule, the new board leadership delivered a remarkable OBMP on June 30, 2000 that created a consensus based approach for making water supplies in the Chino Basin more reliable and cost effective. Cornerstones of the plan include:

- ▲ Financing of desalted water facilities
- ▲ A local trading of ground water entitlements

- ▲ Enhanced water recharge
- ▲ Expanded regional groundwater storage
- ▲ A transparent review process for transfers, recharge and storage and recovery of imported water.

The Board's leadership in moving the OBMP forward through unanimous approval by all parties to the Judgment and the Court was remarkable. Through the Board's commitment, creativity and good judgment a \$200,000,000 liability was transformed into a multi-million dollar asset for the region. ▲

Exhibitors, sponsors, and acknowledgements..

GRA would like to thank our 2000 Annual meeting Exhibitors and Sponsors for helping to make our Annual meeting a success.

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Contact: Phyllis Halvorson (phylgeo@earthlink.net)

Association for Women Geoscientists is a professional organization with an associated nonprofit organization, AWG Foundation. Mission: The Association for Women Geoscientists exists to promote the professional development of its members, to provide geoscience outreach to girls, and to encourage women to become geoscientists. Come visit! Check out our outreach projects, field trips & events.

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Vital and important up-to-date information on the Board and its activities, licensing requirements, examinations, laws and regulations, professional guidelines and consumer issues. A must for any aspiring or currently licensed Certified Engineering Geologists.

California Council of Geoscience Organizations (CCGO)
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CCGO is a nonprofit corporation founded in 1997 to advocate the use of sound geologic knowledge and practice by proposing, reviewing, and monitoring states, regulations, and public policies. CCGO has been active evaluating new legislation and performing public outreach. CCGO is supported by leading organizational and business members.

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Maps and publications of the State of California geologic survey.

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Left to right, Vicki Kretsinger Grabert, David Abbott, Susan Garcia, Tony Ward, Joe Birman with award, Brian Lewis, Paul Dorey, and Tim Parker (not pictured: Scott Slater, Jim Jacobs, Jim Carter, and Anthony Saracino.)

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Joe Birman, left, and Roy Shlemon, show off their awards

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Left to right, Tim Parker, Kathy Snelson, and Tony Ward.

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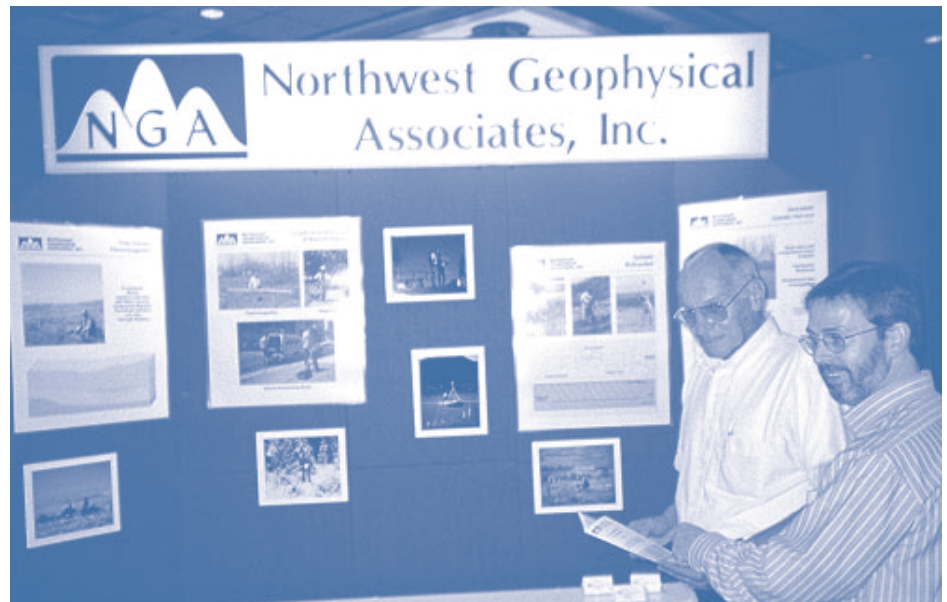
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The Water Resource Center Archives collects information about water resources in California, nationally and internationally. The collection contains historical and current information. Search the catalog at www.melvyl.ucop.edu

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Linda discusses with Zepron the latest water issues at the Water Resources Center Archives booth.

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September 24 mid-morning Technical Session Break

Joseph H. Birman, Ph.D., Year 2000 GRA Lifetime Achievement Award

It is my pleasure to present this year's GRA Lifetime Achievement Award on behalf of our organization. The Lifetime Achievement Award is presented to individuals for their exemplary contributions to the groundwater industry, contributions that have been in the spirit of GRA's mission & organization objectives. The individuals that receive the Lifetime Achievement Award have dedicated their lives to the groundwater industry and have been pioneers in their field of expertise.

This year's recipient is Joseph H. Birman, Ph.D., President of Geothermal Surveys, Incorporated, Professor Emeritus, Occidental College.

Joe Birman was a professor at Occidental College, Los Angeles, from 1950 to 1984, and has inspired hundreds of students to pursue a career in geohydrology. Three GRA board members and many GRA members are former students of Joe.

I should digress here for just a moment to expand on geohydrologist - Joe gave the GRA Keynote Address at our 1996 Annual Meeting and the title of his address if I remember correctly was "Why I Hate Hydrogeology". It was a very interesting, well articulated thesis to the geologist, to keep in mind that other disciplines can enhance and refine, but never replace the portion of geological understanding that only the geologist can provide.

Joe's areas of research have included:

- * Pleistocene and glacial geology, including late Pleistocene and Holocene climatic effects on drainage, alluviation, and groundwater systems

- * Surface temperature processes as applied to groundwater resources and environmental hydrology

He has numerous publications in the journals of the Geological Society of America, California Division of Mines and Geology, American Society of Civil Engineers, and American Institute of Hydrology. Joe has provided contributions to the Handbook of Groundwater



Tim Parker, right, presents the 2000 Lifetime Achievement Award to Joseph Birman.

Development and AEG's Engineering Geology Practice in Southern California.

Joe has received the Outstanding Educators of America Award, is a member of Sigma Xi Honorary Scientific Society, and has received Research Grants from NSF, GSA, and Southern California Edison.

Joe Birman is Founder and has been President of GSI/water (Geothermal Surveys, Incorporated); a Los-Angeles based geological-geophysical company for nearly 40 years. Joe has worked in most of the western United States, the Gulf Coast, Mexico, South America, and the Middle East doing geologic, geohydrologic, groundwater resource exploration and development, dam leakage detection and monitoring, brine resources exploration, and geothermal resource exploration. Joe pioneered the design and application of instrumentation to evaluate shallow groundwater temperatures for groundwater assessment, water resources exploration and development.

Joe is a Registered geologist in the states of

California, Oregon, and Arizona, as well as a Registered Geophysicist, Certified Engineering Geologist, and Certified Hydrogeologist in California. Joe is also a Certified Groundwater Professional (AGWSE) and Professional Hydrologist (groundwater) American Institute of Hydrology.

Professional affiliations Joe has include:

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Member, National Ground Water Association

Member, Association of Ground Water Scientists and Engineers

Member, American Institute of Hydrology

Member, California Groundwater Association

Lifetime Member of GRA

Joe loves to sail and fly. Joe loves geology, and above all else, has been an outstanding contributor to the practice of geology, and to the education of geohydrologists. In retrospect, he is most proud of his uses of thermistors to map groundwater flow and his former students at Occidental College, many of whom have followed his lead in the groundwater field. GRA is pleased to honor Joe Birman for his contributions to the groundwater industry.



Board member, Tony Ward, left, Susan Garcia, and Brian Lewis are former students of Joe Birman's (holding Lifetime Achievement Award). Tim Parker, right, wishes he had Joe as a professor.

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Waterloo
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BOOK REVIEW

REVIEW BY JAMES A. JACOBS, PRESIDENT OF
FAST-TEK ENGINEERING SUPPORT SERVICES.

RESTORATION OF CONTAMINATED AQUIFERS, 2ND EDITION

BY STEVE M. TESTA AND DUANE L. WINEGARDNER

CRC Press/Lewis Publishers
ISBN: 1-56670-320-4

This popular book is published by CRC Press/Lewis Publishers and has been completely updated since the original book Restoration of Petroleum Hydrocarbon Contaminated Aquifers was published in 1991. The objective of this well researched book is to present the state-of-the-art knowledge on restoration of aquifers impacted by petroleum hydrocarbons and other organic compounds and their break down products. This second edition expands the scope of the earlier text by examining all forms of hydrocarbon contamination. The authors are pros having over 60 years of experience in the environmental field. Between them, they have written hundreds of articles and several books. Their contribution to the profession is the easy to understand language of these highly technical concepts. Testa, a geologist and Winegardner, an engineer, hit a homerun with this 446-page volume. The book contains many examples of aquifer restoration in California settings.

The 13 chapters are well organized and concise. The first part of the book includes an introduction, and a history and regulatory framework. The middle section of the book relates to characteristics of the subsurface with a description of hydrogeologic principles, hydrocarbon chemistry, fate and transport, and NAPL subsurface characterization. The last part of the book focuses on remedial technologies, handling of co-produced waters, remediation strategies for dissolved plumes, treatment of impacted soil in vadose zone. The authors also examine economic considerations of aquifer restoration, LNAPL recovery case histories, and site closure.

The value of the book is its appeal to a variety of users. Without compromising clarity, the authors provide a text that can benefit three separate groups of users: new hires, students and practicing professionals.

As a training manual for new hires into the environmental field, this book allows for hands-on and practical information that can augment the training of a field engineer or scientist. The common-sense approach, with simple and elegant explanations of why certain techniques work and why others don't work is invaluable to the new hire. The diagrams are the types that are found in actual workplans and reports. This aspect is invaluable to the new hire, especially for companies not having a current field training manual or program. The 174 figures and 59 tables clarify the up-to-date concepts.

Continued on page 24

New members who have joined GRA
between 8/23/00 and 10/31/00

Welcome!

Mark Adler	Field Solutions, Inc.	SFB
Gino Bianchi	Geomatrix Consultants, Inc.	SC
James Butera	Field Solutions, Inc.	SFB
Howard Franklin	Monterey County Water Resources Agency	CC
Gary Halbert	Geo-Environmental Consultant	SC
Will Harris	URS	SAC
Lynn Hurley	Tetra Tech, Inc.	SC
Patrick Lacey	Field Solutions, Inc.	SFB
Martha Wulftange	Tetra Tech, Inc.	SC
Kevin McCray	National Ground Water Association	OS
Peter McIntyre	AEI Consultants	SFB
Scott Moors	Bing Yen & Associates, Inc.	CC
Matthew Peterson	Tetra Tech, Inc.	SC
Emily Silverman	Subsurface Consultants, Inc.	SFB
Richard Sturn	CH2M Hill	SC
Kelly Tilford	Duke Engineering	SAC

Voluntary Contributions for
Fiscal Year 2000

Thank You!

Founder \$1000+

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Brian Lewis

Timothy K. Parker

Linda L. Spencer

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ARCADIS Geraghty & Miller, Inc. ~ Barry Keller

ARCADIS Geraghty & Miller, Inc. ~ David S. Springer

ARCADIS Geraghty & Miller, Inc. ~ Stephen J. Cullen

Beylik Drilling, Inc. ~ Myron E. Gutzman

Glenn A. Brown

Cambria Environmental Technology, Inc. ~ David Elias

Cambria Environmental Technology, Inc. ~ Joe Theisen

Thomas W. Cooper

Martin B. Feeney

Mr. Fran E. Forkas

Susan Garcia

Geomatrix Consultants, Inc. ~ Bob Kent

David J. Guy

Carl Hauge

Eric D. Hendrix

Bob Kent

Eugene E. Luhdorff, Jr.

Anthony J. Maggio

Richard S. Makdisi

Zach McReynolds

Peter M. Mesard

Harrison Phipps

Saracino-Kirby, Inc. ~ Anthony M. Saracino

James F. Strandberg

James S. Ulrick

Gary D. Weatherford

John Winther

Supporter \$5-\$24

Paul F. Bertucci

Gary J. Halbert

It's All Julia Roberts' Fault

BY BART SIMMONS

In Erin Brockovich, Julia Roberts played the role of a muckraking legal assistant who helped break the case of alleged poisoning with hexavalent chromium. As a result of Erin Brockovich and some new risk assessments, hexavalent chromium, Cr (VI), has become a very hot issue, although the problem is quite old. The problem is that traditionally total chromium has been regulated (and measured) rather than the Cr (VI) species, which is more toxic than other forms of chromium (One exception is the California hazardous waste regulation, which sets separate limits for Cr (VI) and total chromium).

Methods for measuring Cr (VI) in water have been available for decades, but with recent revisions to the risk assessment, a demand has been created to measure Cr (VI) reliably at the low-ppb to sub-ppb level in water. The current technique of choice is ion chromatography with detection of Cr (VI) using a post-column reaction with diphenylcarbazide to form a red-violet complex. EPA has used this technique in Method 218.6 for the water programs, and Method 7199 for the RCRA program. The methods

are essentially identical, and have the same performance data; the listed Method Detection Limit is 0.3-0.4 µg/L (ppb).

Because Cr (VI) may change due to oxidation or reduction, a holding time of 24 hours has been specified for water. The 24 hour holding time creates significant logistical problems. For example, samples collected in the morning and shipped by overnight express may miss the holding time if delivered to the laboratory by the following mid-morning. To avoid this problem, samples may need to be collected in the afternoon and shipped overnight. Some data suggests that the holding time can be extended by preserving the samples at high pH, but this is not yet widely accepted. As a result, lab clients will likely be paying more for expedited analysis.

Measuring Cr (VI) in soil is more problematic than water, because it must be extracted from soil prior to using the techniques for water samples. One practice is to extract soil samples with deionized water; this is clearly not useful if the intent is to measure total Cr (VI). US EPA sponsored research on the extraction problem resulted in the development of EPA Method 3060A, an alkaline digestion method. The method

not only includes a digestion procedure, but an approach to evaluating Cr (VI) results. If one were to spike Cr (VI) into a soil with strongly reducing conditions, e.g., an anoxic sediment, the Cr (VI) would be reduced, resulting in low recovery of the spike. 3060A recognizes this, and specifies additional tests for iron or sulfur to confirm the reducing conditions. 3060A also suggests a holding time of 30 days for soil samples, based on round-robin studies of the proposed method.

A colorimetric method for soil extracts, EPA 7196A, has been found to have significant interferences from colored matter. Unlike the 218.6/7199 methods, 7196A does not separate Cr (VI) from other potential interferences prior to analysis, and as a result is prone to false positive results. As a result, the ion chromatography method (218.6 / 7199) is generally preferred.

Now that the importance of chromium speciation is apparent, can arsenic and selenium be far behind? 💧

Bart Simmons is Chief of the Department of Toxic Substances Control's Hazardous Materials Laboratory. Bart can be reached at bsimmons@dtsc.ca.gov.

Department of Toxic Substances Control Exams

The Department of Toxic Substances Control is offering continuous filing for the following exams (the title in parenthesis is the civil service classification):

- Geologist/hydrogeologist/engineering geologist (Hazardous Substances Engineering Geologists [HSEG])

- Engineer (Hazardous Substances Engineer [HSE])
- Environmental Scientist (Hazardous Substances Scientist [HSS])

The HSEG exam may be offered in April or May, but you need to apply now. For more information and an application, visit

DTSC's web page at www.dtsc.ca.gov. If you would like to know why more groundwater professionals are going to work for DTSC, contact Brian Lewis (916)323-3632 or via email: blewis@dtsc.ca.gov. 💧

Groundwater Resources Association (GRA) Presents: The Series on Groundwater Contaminants

HEXAVALENT CHROMIUM IN GROUNDWATER: THE SAN FERNANDO VALLEY CASE STUDY

Thursday, January 25th, Burbank CA.

Health and Human Service held a hearing titled the “Health Effects of Chromium VI Contamination of Groundwater” attended by Senators Deborah Ortiz, Tom Hayden and Adam Schiff. The hearing addressed total and hexavalent chromium found in Burbank, Glendale and the San Fernando Valley. The hearing in South El Monte was called by Assemblyman Thomas Calderon to discuss chromium in the San Gabriel Valley.

Why the sudden interest in hexavalent chromium? Certainly, the success and notoriety of the film “Erin Brockovich” has added some interest in the issue. Probably more significant is the recommendation from the Cal-EPA Office of Environmental Health Hazard Assessment (OEHHA) for a Public Health Goal (PHG) of 2.5ppb total chromium and 0.2ppb for hexavalent chromium. The current drinking water standard in California is 50ppb and is for total chromium only—there is no standard for the hexavalent chromium. Also adding to the interest are the results of a recent investigation in which 30 of 80 San Fernando Valley wells were found to have detectable amounts of hexavalent chromium at levels as high as 110ppb. In a separate report, the San Gabriel Basin Watermaster reported levels of total chromium up to 30ppb in wells in San Gabriel Valley, and estimated that the adoption of the PHG would result in the closure of 100 of the 180 wells in operation. Areas outside of Southern California are also detecting chromium, such as Davis and Sacramento County.

There is currently a debate if and how to implement the new PHG levels recommended by OEHHA. The PHGs by law take into account only the risk to public

health, in this case a cancer risk. The recommended PHGs are only “goals” and are not enforceable. In contrast, the drinking water standards must take into account the risk as well as the economic costs to meet the standards. The Senate committees that held the hearing in Burbank are considering pushing for the creation of an action level, to be set at the same levels as the PHGs. This action level would be in place until a new standard could be approved.

According to Dr. David Spath, the Chief of Drinking Water for the Department of Health Services, the extent of this low level chromium contamination and the cost of remediation are not known, and therefore the current standard cannot be changed to the health goal. He has called for an emergency rule that will be in place by the end of this year that will require all public water agencies to monitor for hexavalent chromium and report their findings. It will take some time to complete the monitoring program, but this is not of great concern as the risk caused by the hexavalent chromium at these low levels in groundwater is not considered an acute risk. He expects that within two to three years the cost of adopting the recommended goal will be better understood.

Many of the water agencies have commented that if wells that exceed the PHG levels are shut down, there will be considerable economic impact. The City of Los Angeles has estimated an annual cost of \$47 million to provide replacement water to offset the loss from the closed wells. The San Gabriel Basin Water Quality Authority also warns that it will cost millions annually to replace the water from wells put out of action. The water agencies also question if the public health goal is

warranted, given EPA’s stance to stay with their 100ppb total chromium standard. In addition to these issues, there are concerns that remediation technologies are not available that can clean up contaminated groundwater to the 2.5 and 0.2 levels for total and hexavalent chromium.

In response to these questions, GRA is planning a full-day workshop to examine the emerging issue of low-levels of hexavalent chromium being found in the groundwater. The workshop will be comprehensive with the goal being to help to define the current knowledge of the problem. The following sessions are being developed for the workshop: Distribution and Characteristics; Toxicology and Risk; Social, Political, and Legal issues; and Regulatory and Remediation Approach, using the San Fernando Valley as a case study.

The workshop is intended to be useful for GRA members and water agency, regulatory, and consultant staff. Cost is \$145 for GRA members/Government Agencies and \$185 for non-members. GRA plans to invite the recognized experts in the field to discuss the issues related to hexavalent chromium in the groundwater, with senior staff from DTSC, OEHHA, EPA, water agencies, prominent law firms and other leaders on this important issue. GRA is also looking for co-sponsors for this event. If you would like to co-sponsor, participate or if you have questions, please call Jim Cater, GRA Board Member at 310-618-8889 or contact him by email at jcarter@emaxlabs.com. See page 20 for the tentative agenda.

Groundwater Resources Association (GRA) Presents: The Series on Groundwater Contaminants HEXAVALENT CHROMIUM IN GROUNDWATER: THE SAN FERNANDO VALLEY CASE STUDY

Thursday, January 25th, Glendale Hilton, 100 West Glenoaks Blvd.

Tentative Agenda

7:30-8:30 Registration

8:35-8:45 Introduction/ Overview of the Problem & Day

Jim Carter, Emax Labs
Tim Parker, GRA President

8:45-9:45 Session #1

Hexavalent Chromium Characteristics and Distribution, Martin Steinpress

Dr. Jim Davis, USGS, The Fate & Transport of Chromium and Hexavalent Chromium

Carl Palmer, Portland State & EPA, Fate & Transport

Speaker TBD, Discussion on Chromium Contamination from industrial sites in Glendale, Burbank and Los Angeles

9:45-10:15 Break

10:15-12:05 Session #2

Risk/Toxicology, and Testing Paul Parmentier & Vicki

Dr. David Spath, CA Department of Health Services drinking water chief, Implementation of the Public Health Goals (PHGs) and the Future of Drinking Water Standards for Chromium

Dr. Lee Shull-toxicologist, Overview of Chromium Toxicology and Federal & State Drinking Water Standards and Public Health Goals

Bart Simmons, DHS, Sampling and Analysis of Hexavalent Chromium

Dr. Robert A. Howd, Chief, Water Toxicology Unit, OEHHA, Cal/EPA: Risk assessment for chromium in drinking water

12:20-1:20 Lunch with Keynote Speaker

HEXAVALENT CHROMIUM IN GROUNDWATER: THE SAN FERNANDO VALLEY CASE STUDY, CONTINUED

1:30-3:00 Session #3

Social & Political Impacts & Legal Issues

Anthony Brown

Scott Kuhn, Committee for Better Environment, Environmental Concerns

Metal Finishing Industrial Assoc Rep, Industries Concerns

Steve Hoch, Hatch & Parent, Legal Impact of PHGs on the Industrial Companies

Joe Gonzalez, Masry & Vititoe, Legal impact of PHGs on the Public

3:00-3:20 Break

3:20-4:50 Session #4

Regulatory Approach & Remediation

Tony Ward, Montgomery Watson

Mel Blevins, Upper Los Angeles River Area (ULARA) watermaster, Impact of PHG's on groundwater in the San Fernando Valley

Kimmi Klein, DTSC, Implementation of PHG to drive clean-up levels in soils

Carl Palmer, Portland State & EPA, Remediation technologies

4:50-5:30 Panel Discussion & Conclusion

Tim Parker

For information, please call Jim Carter, GRA Board Member at 310-618-8889 or contact him by email at jcarter@emaxlabs.com or check out the GRA web site at www.grac.org.

GRA is looking for a limited number of co-sponsors for the event as well as break and lunch sponsors. We currently have four firms that have expressed interest, so please call Jim ASAP if you want your firm to be part of this important workshop.

enviro-tech
pick up

Response to the Technical Committee Request for Review of their MTBE Position Paper

October 30, 2000

Mr. Paul Parmentier
Chair
GRA Technical Committee

Dear Mr. Parmentier:

This letter is written in response to the GRA Technical Committee's request for comments on its draft MTBE paper, which states "Due to the chemical characteristics of MTBE, remediation or clean-up of the contaminant is expensive, time consuming and technically difficult."

Fortunately, Applied Process Technology, Inc. ("Applied") of San Francisco, California, has developed a robust and innovative advanced oxidation technology, known as HiPOx(tm), which has demonstrated its ability to efficiently and cost-effectively destroy MTBE along with other fuel components from levels as high as 660,000 ppb to less than 0.5 ppb.

A key report published by The California MTBE Research Partnership identifies Applied as a leader in MTBE destruction technology and HiPOx as a cost-effective solution when compared with competing treatment methods. It also reveals that HiPOx is one of the only technologies that has consistently demonstrated excellent results in real-world, commercial applications.

Unlike typical advanced oxidation processes, HiPOx provides excellent contaminant destruction efficacy and controls bromate formation to below regulated limits. And unlike competing technologies, the HiPOx process easily destroys MTBE and produces zero waste.

Since HiPOx systems do not require replacement of filtration media, rarely need servicing, and do not experience breakthrough of contaminants, uptime exceeds 95 percent. Therefore, operating costs are minimal.

Designed for a service life of 15 to 20 years, HiPOx systems are easily configurable to handle a wide range of contaminant concentrations. Because HiPOx systems are small, self-contained units, they can be relocated from one site to another after a remediation project is complete.

With all of these benefits, the HiPOx technology enables MTBE-contaminated water sources to be treated simply, effectively and at a reasonable price.

For more information on HiPOx, Applied's breakthrough groundwater treatment technology, please visit our web site at www.apptwater.com or call me at (925) 977-1811, extension 201.

Sincerely,
Terry Applebury
Executive Vice President

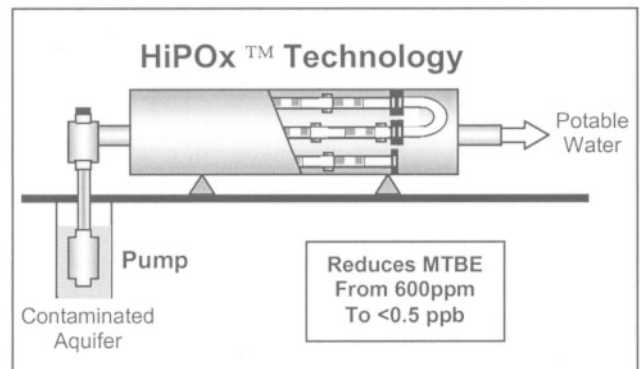
Letter to the Editor:

'editor@grac.org' <editor@grac.org>
Subject: article by G Fred Lee in Fall 2000 issue
Date: Tue, 12 Sep 2000 09:53:03 -0700

It is a little disturbing to see an article by G Fred Lee that has 11 references all from G Fred Lee. With a Statement at the end of the article that Guidance is provided in the author's publications listed below???? I think that G Fred Lee should be charged a full page price for advertising. I think we can do better than this in reviewing articles before they are published.

Bob Kent
Geomatrix Consultants
330 W Bay Street
Costa Mesa, Ca 92627
949-642-0245
email:bkent@geomatrix.com

The invoice is in the mail to G Fred Lee. Thanks for your comments. We welcome unbiased articles, but we sometimes lack discretion in what we print. Responses to Mr. Kent's letter will be limited to 104 words or less because of our limited space. FF



The best choice for the removal and destruction of the groundwater contaminants MTBE, TBA, BTEX, PCE, TCE, 1,4 Dioxane, 1,2 DCE, 1,1 DCE and NDMA to MCLs or below.

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Applied Process Technology, Inc.
www.apptwater.com

AEG • GRA 2000 San Jose, California September 19-26, 2000

The 2000 joint annual meeting of AEG and GRA was a resounding success. More than 700 people attended and 55 companies (a new record) filled the Exhibit Hall to overflowing. Thirty-seven sponsors generously supported a variety of meeting events. Sponsor income also set a new record.

The only "little" glitch for the entire meeting was the entertainment from an adjacent function that intruded on our Annual Banquet. Sound from a Mariachi Band and a very loud rock band interfered with our reception, dinner, and awards. AEG President Rex Upp and Meeting General Chair Bob Tepel provided direction and support for my discussions with the General Manager of the DoubleTree Hotel, and an appropriate adjustment was made in the billing for the banquet.

I wish you success in Sacramento at your 10th Annual meeting held in conjunction with the Biennial Groundwater Conference, September 2001. Be sure to mark your calendars now for this annual meeting

Julie C. Keaton

AEG•GRA 2000 Meetings Manager

The next HYDROVISIONS due date for articles is January 14, 2000. We WELCOME your ARTICLES and PHOTOS. Articles may be emailed to editor@grac.org
See our web page, www.grac.org for guidelines for submitting articles and advertising.

B R A N C H A C T I V I T I E S

Sacramento Branch Highlights

BY DAVE ZUBER
SACRAMENTO CHAPTER SECRETARY

Our Sacramento Chapter October meeting was well attended and included several noteworthy occurrences. GRA State President Tim Parker opened the meeting with a summary of several State GRA issues and events, and reviewed the highlights of the September Annual Meeting held in San Jose. Tim was also on hand to help our Branch President, Barbara Heinsch, present to four Sacramento Chapter members' tributes of appreciation in recognition of their "outstanding dedication and support for helping GRA implement its mission." The honorees were David Sederquist and Roy Kroll (both of Youngdahl and Associates), Jim Parsons (retired Geologist), and G. Fred Lee (G. Fred Lee and Associates). The tributes were presented for their enthusiastic contributions to GRA meetings, conferences, and special events, and their continuous attendance. Congratulations David, Roy, Jim, and Dr. Lee and thanks for all your help and support!

After the festivities, Joseph Domagalski who is a Supervisory Hydrologist with the U.S. Geological Survey, Water Resources Division, California District Office here in Sacramento treated us to a talk. Mr. Domagalski presented data and conclusions from his water quality assessment of southeastern Sacramento Valley aquifers located below Sacramento Valley rice fields, and below the recently urbanized region of metropolitan Sacramento. His research has been conducted as part of the U.S. Geological Survey National Water Quality Assessment Program. The results of the sampling are used in conjunction with existing water quality standards and are compared to water quality in other regions of the United States. Aggregation of the data at the national level allows for a statistically valid summary of a large portion of the nation's water quality with respect to major environmental legislation, such as the Clean Water Act and the Safe Drinking Water Act.

Mr. Domalgaski also had the unique opportunity to include the Sacramento Valley

study and other regions of the United States in an international comparative study with an aquifer system in an agricultural region of the People's Republic of China. The international study has started to evaluate differences in hydrological influences, land use and fertilizer use result in significant differences in the concentrations of nitrate and other agricultural contaminants in these various settings.

The Sacramento Chapter is looking forward to several upcoming events. Our joint Holiday meeting with AEG will be held on December 6 at Sudwerks, Sacramento and will include the popular raffle of donated door prizes. Our proposed field trip to Iron Mountain Mine, although postponed from this Fall, will be rescheduled to the Spring of 2001. And our branch will resume our normal monthly meeting schedule in January of next year.

Outgoing Message from Barbara, President of the Sacramento Chapter of GRA.

It has been a real pleasure serving as President of the Sacramento branch for the past two years! This is a great association to be involved in; the presentations are interesting and informative, the conferences well organized and educational, and the Board members and statewide officers dedicated and friendly. It has been a joy to work with the other officers within our Chapter (David Von Aspern, Steve Phillips, Richard Shatz, and Dave Zuber) as they epitomize the meaning of team spirit. But the best part of GRA for me has been the camaraderie of the members. At each meeting, there are always those familiar faces that I know by name. But in addition, there are several first timers or occasional attendees who look a bit tentative when they first arrive. However, because the regular members are so friendly and warm, often the newcomers make a point of telling me how much they enjoyed the meeting and the people they met. Some may say GRA provides an opportunity to network while at an educational meeting but for me it's more like making new friends while dining out. I'm sure you would agree!

Thanks to all for making my two terms be so enjoyable! I will be back as a member so I hope to see you soon!

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San Francisco Bay Regional Water Quality
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ls@rb2.swrcb.ca.gov

Vice-President: Gary Foote
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South San Joaquin Valley Branch
e-mail: ssjv.branch@grac.org

Gary Corbell
Welenco, Inc.
(805) 834-8100

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 Kathy Sneslon at (916)446-3626 or email execdir@grac.org. Thank you to those that have generously pledged funds:

List of donors toward second printing of Groundwater Guidance Manual (as of November 15, 2000):

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
Gary D. Weatherford	150
Mission GeoScience, Inc.	500
TOTAL	\$8650

Dates & Details

2001 BOARD OF DIRECTORS' MEETING DATE AND OTHER KEY DATES

ALL MEMBERS WELCOME

Retreat/Board Meeting,	January 14/15, 2001 North San Francisco Bay Area
Board Meeting,	April 7, 2001 Montgomery-Watson, Pasadena, April 7, 2001
Board Meeting,	August 11, 2001 FAST-TEK, Point Richmond
Board Meeting,	November 3, 2001 Wallace-Kuhl, Sacramento
Seminars	January 25, 2001 New Groundwater Contamination Series, Hexavalent Chromium Symposium, Glendale Hilton
	Spring or Summer 2001 Environmental Statistics, Location to be determined
	Fall 2001 Groundwater Modeling, Location to be determined
Annual Meeting	Fall 2001 Joint with Biennial Groundwater Conference, Sacramento.

Book Review

Continued from page 16

As a textbook for an environmental engineering or environmental science course, the book provides the basic and advanced concepts for the student in college or short course. The real world case studies provide value of what has been tried and what works in the field.

As an up-to-date general reference book for practicing environmental professionals, this book is well integrated and flows from beginning to end. All the main concepts

are here in this one book, creating a useful addition to the library of the environmental professional. In contrast to other books, which are a collection of articles by various authors, this book is cohesive and flows nicely from one chapter to another, hitting on the most important concepts.

By-Law Change:

Approval or disapproval of by-laws change. This change in our by-laws is to increase the number of directors from the current eleven (11) up to 15 (fifteen). This change is requested to expand the board's representation to included underrepresented interest, such as manufactures, contractors, educators, or other individuals with an interest in fulfilling GRA's mission. Please vote. We need a quorum of members to approve or disapprove the proposed changes.

ARTICLE 3, SECTION 1: NUMBER OF DIRECTORS

Current: The corporation shall have eleven (11) Directors and collectively they shall be known as the Board of Directors.

Proposed: The corporation shall have at least eleven (11) and not more than fifteen (15) Directors and collectively they shall be known as the Board of Directors.

APPROVE

DISAPPROVE

Signature _____

Print name _____

Date _____

Please mail or fax this ballot page to GRA, 915 L Street, Suite 1000, Sacramento, CA 95814. Fax (916) 442-0382.

All ballots must be RECEIVED by December 31, 2000.



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