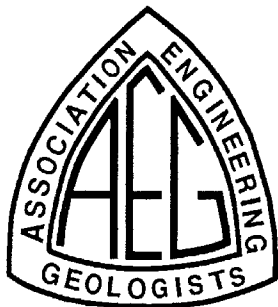


Association of Engineering Geologists

Southern California Section

NEWSLETTER - May 1989



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KOSMOS Computer Mail
Username: KROWE

2550 Beverly Blvd.
Los Angeles, CA 90057

Dinner Meeting *Tuesday May 9th*

The Quiet Cannon Restaurant
901 North Via San Clemente
Montebello

Cost - \$20.00

For reservations call

Jerry Treiman
(213) 620-3560 (CDMG LA Office)

Make reservations by Noon on the Friday before the Meeting

5:30 Social Hour

6:45 Dinner

7:30 Announcements

8:00 Program

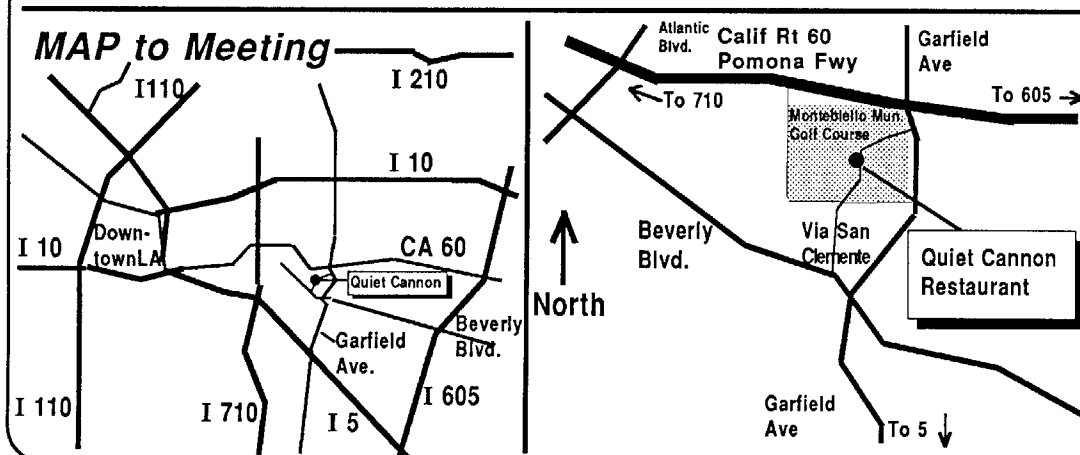
9:00 Section Affairs

Program

TOPIC The Use of Geogrid Reinforcement for
Buttress Slope Construction

SPEAKERS Iraj Poormand, Principal Geotechnical Engineer
Leighton & Associates

David Baun, Western Regional Manager
Tensor Corporation



Program

Topic & Speakers

The Use of Geogrid Reinforcement for Buttress Slope Construction

Iraj Poormand & David Baun

Iraj Poormand will report on construction of an earthen buttress in La Jolla using geogrid reinforcement. The buttress slope is up to 115 feet high and has a slope face which is locally steeper than 1:1. This project was awarded "Project of the Year" by the California Geotechnical Engineers Association. David Baun will provide technical information on the Tensar Geogrid product, including strength, life expectancy, and cost. Various aspects of the uses of their product will also be presented.

Iraj Poormand is a registered geotechnical engineer and has been a principal with Leighton & Associates since 1978. Iraj holds B.S. & M.S. degrees in engineering from San Diego State Univ. Iraj has considerable expertise in embankment and landslide stabilization techniques.

David Baun is the western regional manager for Tensar Corp. and has been with the company since 1984. David holds a B.S. in civil engineering from Temple University and an M.B.A. from San Francisco State Univ.

THIS MONTH

May 1989



Kelly E. Rowe
Hydrogeologist

The program at our meeting this month relates to the use of geogrid material for slope reinforcement. Engineering geologists interested in hillside development will find this program interesting. The work site is in The Jewel (La Jolla), California. To be brief, the geology of the area is comprised predominantly of Cretaceous and Eocene marine deposits overlain by Quaternary marine terrace deposits. The land slopes moderately toward the coast, which allows many spectacular views of the coastline and great sunsets. Because of its attractiveness and the predominant geologic situation much slope movement has occurred in the La Jolla area for decades.

At last month's meeting Dr. Lorne G. Everett, of Kaman Tempo in Santa Barbara, spoke about vadose zone monitoring techniques employed at underground storage tank sites and at landfills. He also spoke about recent advancements in this field. Dr. Everett was our longest-winded speaker of the programs this year, but he relayed a lot of useful information. Only a brief amount of his talk will be reported for those who were unable to attend. Dr. Everett invites you to call him if you desire advice about monitoring the vadose zone.

Dr. Everett said that what most regulators are interested in at a site is where the adsorbed phases of hydrocarbons are and where they are going. One of the best techniques for evaluating this situation is the use of neutron probes. There is in the use of neutron probes "zero analysis cost & real time read-out". The cost of the neutron probe is \$4,500 and it takes about twenty (20) minutes to run. Runs take place in cased holes. The original concept involved the use of seamless aluminum or stainless steel, as recommended by the USGS. Tests results with PVC cased holes compare well with results from stainless steel cased holes. There is a negligible amount of attenuation in the neutron probe readings using PVC.

Dr. Everett even suggested that perforated PVC cased holes be used to monitor the vadose zone. After neutron probe monitoring detects a potential zone of water or hydrocarbons migrating from a horizon, the use of perforated casing would allow samples to be collected at discrete depths.

Some other points Dr. Everett mentioned are as follows:

- 90 % of contaminant migration problems at underground storage tank sites relate to failure of the piping system.
- There are only 3 soil pore sampling devices available on the market today, and 2 do not work. The BAT system (Sweden - local office in Long Beach) is the only one that works.
- Fiber optics is a promising technique for monitoring contaminant migration. One way of installing these thin tools into soil, rather than use a hollow stem auger rig, is through the use of laser technology. Tests performed with a 300 watt laser source made a 300 foot long hole in 8 hours.

Continued on page 3

Continued from page 2

The summary of responses to the Questionnaire California Members of AEG filled out in late 1988 in regard to • present professional practices, • board activities and • continuing education are presented on pages 4, 5 & 6. These responses are from a total of 166 people: 104 from the SF Section and 62 from the SC Section. Any additional comments can be mailed to me at my address listed on the page 1. I will pass them along to appropriate people.

News on a reprint of a "Classic" Reference. The Los Angeles office of the California Dept. of Water Resources (DWR)- (213)620-4107 - has reprinted a limited number of their (1961) Bulletin 104, Appendix A "Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County - Ground Water Geology". Most people working in the southern California ground water community have xerox copies of this reference in their libraries. Because the original version of Bull. 104 Appendix. A used an extensive number of colored plates showing the local geology both through maps and cross-sections, xerox copies lost a lot of the clarity & definition of the original plates. DWR recently reworked the original plates so that now they show distinctive textures for features in black and white. The reprint is also comb-bound so the pages may be more easily xeroxed.

Seminars/Meetings/Field Trips

MAY 1989

10-12 AAPG-SEPM-SEG-SPWLA Pacific Section 64th Annual Meeting, Palm Springs, Amer. Assoc. of Petroleum Geologists, the Soc. of Economic Paleontologists and Mineralogists, the Soc. of Exploration Geophysicists and the Soc. of Professional Well Log Analysts. Events AEG members may find useful: 1) full-day symp. "Environmental Concerns in the Petroleum Industry", 2) SEG symp. "Case Histories and Interpretation" and "Acquisition and Processing Developments.", 3) Pre-convention short courses "Remote Sensing for Petroleum Exploration", "Practical Petrophysics for Exploration and Development Use of Rocks/Logs to Evaluate Reservoirs, Seals and Source Rocks." 4) two pre- and three post-meeting field trips pre..1) Algodones Dunes via dune buggy 2) Chevron's Heber Geothermal Field; post...1) So. Great Basin Carbonate Rock Sites(2-days), 2) San Andreas Fault Zone-a)Palm Tree Structure & b) Mecca Hills, and 3) Application of Conglomerate Analysis to Interpreting the Origin of the Continental Late Eocene-Oligocene Sespe Formation Bordering the L.A. Basin. CONTACT: (918)584-2555 Ext. 241 Barbara Caves, AAPG Convention Dept., P.O. Box 979, Tulsa, OK 74101-0979 or (213)698-0081 Mike Mitchell w/ Petroleum Testing Service

19 Southern California Waste Management Forum Meeting Michaels Restaurant 6309 E. Washington, City of Commerce
Lunch 12:00 Program 11:45 Call (213) 927-2611

JUNE 1989

5-9 "Contaminant Hydrogeology: From Field Investigation to Remedial Design: A Strategy for Decision-Making", Domenico, Freeze, Schwartz, & Smith at The Quails Inn, Lake San Marcos Resort, San Diego, Western Experience Professional Meeting Coordinators. Carlsbad CONTACT (619)943-7694 or Allan Freeze (604)228-6462.

19-23 "Parameter Estimation in Groundwater Simulation", Dr. Richard Cooley (USGS) and Mr. Steve Larson (S.S. Papadopolus) International Ground Water Modeling Center Short Course, International Ground Water Modeling Center Short Course. CONTACT (317)283-9458.

Special International Events in the U.S. beginning June.

The 28th Session of the International Geological Congress (IGC) will be held in the United States of America July 9-19, 1989, in collaboration with, and under the sponsorship of, the International Union of Geological Sciences. The 28th IGC is co-hosted by the U.S. Geological Survey and the U.S. National Academy of Sciences in cooperation with major U.S. earth sciences societies and industry organizations on behalf of the entire U.S. earth sciences community.

Mail to IGC (International Geological Congress)
P.O. Box 727
Tulsa, OK 74101-0727

If paying by check make payable only to: 28th IGC
Preregistration Deadline (at normal rate) February 1, 1989
Deadline for late preregistration May 1, 1989

All other inquires and general correspondence concerning the Congress should be addressed to:

Dr. Bruce B. Hanshaw
Secretary General, 28th International Geological Congress
P.O. Box 1001
Herndon, Virginia 22070-1001

The following field trips are listed for the convenience of AEG SCS members. They focus on trips that are located primarily in the southwestern United States. Contact the above address for field trips available in the other parts of the country you are interested in. Plan your vacation now to take advantage of this unique opportunity.

JUNE

28-7/7 Field Trip T181-Engineering geology of western U.S. urban centers. I.G.C. Program Leaders: Jeffrey Keaton (Earthstore) and Richard N. Morris (San Diego Soils Eng.) Cost: \$1,800 Starts in Los Angeles Stops in Denver.
29-7/7 Field Trip T110- Sedimentation and Tectonics in coastal southern California. I.G.C. Program Leaders: Patrick Abbott (SDSU), Martin H. Link (Mobil R & D Corp.) and Tor H. Nilsen (App. Earth Tech.) Cost: \$900 Starts in San Diego Stops in Los Angeles.

JULY 1989

1-7 Field Trip T105- Geology of San Francisco and vicinity. I.G.C. Program Leader: Clyde Wahrhaftig (USGS) Cost: \$1,100 Start-Stop in San Francisco.
1-7 Field Trip T111- Petroleum geology and structural transect across western Transverse Ranges and southern Coast Ranges, California. I.G.C. Program Leaders: Thomas Davis (Consultant) and Jay Namson (ARCO) Cost: \$925. Start - Stop in Los Angeles.
2-7 Field Trip T108- Tectonic evolution of northern California. I.G.C. Program Leaders: M.C. Blake, Jr., and D.S. Harwood (USGS) Cost: \$1,150 Start-Stop in San Francisco.
3-7 Field Trip T109- Mesozoic and Cenozoic siliceous sediments of California. I.G.C. Program Leader: Joyce R. Blueford and Caroline Isaacs (USGS) Cost: \$700 Starts in San Francisco Stops in Los Angeles.
3-7 Field Trip T113- Petroleum potential of the Basin and Range province. I.G.C. Program Leader: Norman H. Foster (Indep. geol) Cost: \$675 Start and Stop in Las Vegas.
5-7 Field Trip T186- Geology of Nevada Test Site and surrounding area. I.G.C. Program Leader: H. Lawrence McKague (LLN Lab), Paul Orkild (USGS) and Vel Clanton (DOE) Cost: \$500 Start and Stop in Las Vegas.
20-24 Field Trip T311- Oil in the California Monterey Formation. I.G.C. Program Leaders: R.J.B. Young and T.C. MacKinnon (Chevron) Cost: \$800 Start and Stop in Los Angeles.
20-26 Field Trip T312- Arc volcanism in the southern Cascade Range I.G.C. Program Leader: L.J. Patrick Muffler (USGS) Cost: \$775 Start and Stop in San Francisco
20-28 Field Trip T313- Quaternary volcanism of Long Valley caldera and Mono-Inyo Craters, eastern California I.G.C. Program Leaders: Roy A. Bailey, C. Dan Miller (USGS) and Kerry Sieh (Cal Tech) Cost: \$650 Start and Stop in Reno.
20-29 Field Trip T308- Geologic evolution of the northern most Coast Ranges and western Klamath Mountains, California. I.G.C. Program Leaders: K.R. Aalto (Humboldt SU) and G.D. Harper (SU of NY-Albany) Cost: \$750 Start and Stop at San Francisco Intern. Airport.
20-29 Field Trip T309- The San Andreas transform belt. I.G.C. Program Leaders: Arthur G. Sylvester and John C. Crowell (UCSB) Cost: \$1,400 Start in Long Beach Stops in San Francisco.
20-29 Field Trip T381- Landslides in central California. I.G.C. Program Leader: William M. Brown (USGS) Cost: \$1350 Start and Stop in San Francisco

7 & 8/11 Prof. Geology Exam Review Course: in Costa Mesa Converse Environmental Consultants offices, REG Review, Inc. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099. Other courses are available in southern California at about this same time. Call the Contact number for more information.

Summary of responses to the Questionnaire California Members of AEG filled out in late 1988 in regard to • present professional practices, • board activities and • continuing education.

A total of 166 responses were received: 104 from the SF Section and 62 from the SC Section. Summaries of the responses to the multiple choice questions are listed. Comments are listed after the appropriate questions, highlighted by a star (*).

QUALITY OF PROFESSIONAL PRACTICE

1. I write or co-write ___ geologic reports per year.

over 36	42%	24-36	14%
12-23	26%	zero	4%
1-11	14%		
 2. I sign ___ reports as a licensed professional (RG,CEG,RGP) per year.

over 36	34%	12-23	17%
1-11	23%	zero	14%
		24-36	11%
 3. I review ___ reports per year.

over 36	39%	1-11	24%
12-23	26%	24-36	13%
		zero	4%
 4. I review reports for:

internal company review	132 responses
private sector	76
city government	50
county government	37
state government	27
federal government	10
other	3
 5. Of the reports I have reviewed, ___ per year were of substandard or unacceptable quality.

1-5	45%	over 10	17%
none	25%	6-10	10%
		(No Answer)	2%
 6. Quite often the inadequate reports are:

incomplete	119 responses
contain unsubstantiated conclusions	84
incorrect	44
incomprehensible because poorly written	23 (SC only)
fraudulent	5
 7. Number in order of frequency how the inadequate reports were dealt with (1= most frequent).
 1. Rejected/returned report for corrections
 2. Had work redone by a different party
 3. Accepted report as written
 (No Answer: 37)
 8. I ___ referred a report to the Board of Registration.

have not	89%
have	9%
(No Answer)	1%
- Comment:
 * Reports/investigations are generally always brought up to acceptable standards following additional study or report revision.
9. Personal liability ___ filing a complaint to the Board of a deficient report.

is not a factor when	59%
prevents me or my company from	14%
(No Answer)	26%
(Other) could be a factor when	1%

10. If you filed a complaint and were not satisfied with the Board's response to your complaint, why do you feel the Board did not take adequate action? (16 comments)
- *Board is afraid to discipline or reprimand.
 - *Executive Secretary is bureaucrat only trying to preserve his job.
 - *Board operates to create and sustain a monopoly on the practice of geology. Quality is not a dominant concern of the Board.
 - *Results of any action taken not made available.
 - *Board never saw reports sent in for review.
 - *Board lacks ability for intermediate or lesser punishment - can charge only total incompetence.
 - *Don't know.
 - *Board's inertia - unwilling to become an active Board.
 - *Engineer's Board is in charge.
 - *Contractor wrote geologic report.
 - *Thought Board handled only fraud/criminal intent cases.
 - *Board has no definition of geologic guidelines for enforcement standards.
 - *No set procedures for acting on a complaint.
 - *Not interested in adding to their workload.
 - *Board concerned only with image and not responsibilities.
 - *Civil Engineer couldn't be investigated.

11. Given the Registration Board's limited funding and manpower, number in importance how their resources should be allocated.
1. Testing of geologists.
 2. Enforcement of professional standards.
 3. Development of professional guidelines.
 4. Overseeing continuing education.
 5. Consumer education.
- Comment: *Evaluate practicing geologists.

12. If the Board allocated more resources towards enforcement it would ___ the quality of professional geologic practice.
- | | |
|------------------|-----|
| improve | 49% |
| slightly improve | 31% |
| greatly improve | 10% |
| not affect | 7% |
| (No Answer) | 4% |

- Comments:
- * How much is normally allocated towards enforcement?
 - *I don't know. I would like to see some statistics where this was done in other professions.
 - *No effect. Must set up standards and definitions first!
 - *Too drastic to revoke license! Warning of potential letter of reprimand and invoke temporary suspension if problems continue.

13. What other enforcement options (besides revocation of licenses) should the Board have?
- | | |
|---------------------------------|---------------|
| Temporary suspension of license | 143 responses |
| Letters of reprimand | 99 |
| Fines | 82 |
| Published letters of reprimand | 74 |
| (Other) No enforcement options | 3 |

- 14.(SF only) Do you feel the Board's present practice of referring reports signed by unlicensed geologists to the County Attorney Generals for civil action is effective?
- | | |
|-------------|-----|
| Undecided | 54% |
| No | 27% |
| Yes | 13% |
| (No Answer) | 7% |

- Comments:
- *It appears never to have been effective. I have seen unlicensed people practice. Licensed engineers should not be allowed to sign geologic and hydrogeologic reports.
 - *Don't know, but penalties should be strict.
 - *Didn't know they did.

Continued from page 4

- *Undecided means that the Board does not keep its registrants informed of current actions, plans, or even the process of registration enforcement.
- *No mandate to prosecute.
- *I really don't hear how many reports are referred to Board or what happens. The problem extends beyond unlicensed geologists.

14. (SC only) What new services can the Board provide to promote and improve the practice of geology in California? (37 comments)

- *Not convinced that any new services from the Board will effectively promote and improve practice.
- *Board operates in a vacuum. I have a very limited knowledge of what the Board does, can do for me, can do for the industry.
- *More testing dates.
- *Promote awareness of profession and educate the public.
- *Do something other than give exams.
- *Have a presence at technical shows and conferences.
- *Prepare brochure of Board activities.
- *Rate University/School standards.
- *Set up standards, definitions, guidelines for professional opinions.
- *Provide technical short courses, symposia, seminars.
- *Publish up-to-date registration list.
- *Send a directive of professional responsibilities.
- *Educate regulatory agencies as to what is acceptable professional work.
- *Evaluate the review practices within government/regulatory agencies.
- *Periodic random review of consultant reports, including interviews.
- *Act more frequently on complaints.
- *Help provide economical educational opportunities.
- *Summaries of case law results and state laws/agency regulations changes.
- *Enforcement of standards.
- *Notice of enforcement actions taken so that those practicing on the fringe will understand the repercussions of improper work practices. The Board should be able to target general areas of deficiencies in reports and make the technical societies, universities, etc. know so that the appropriate continuing education classes can be given.
- *Continuing education requirement.
- *Obtain and disseminate legal opinions that make sense. (Consider recent opinion re: Geotechnical Engineer).
- *One open meeting annual report to AEG profession.
- *Provide a newsletter with a typical substandard report or conduct with findings of Board.
- *Define geology and have it made force of law. Geology Act needs to be overhauled.
- *More exams.
- *News conferences on geologic issues.
- *Require CEG license for hydrogeology studies.
- *Closer relationship with professional societies.
- *Improved self-regulation.
- *The problems of quality of professional practice are seldom related to reports that are simply "incorrect". When a professional says that another professional's report is "incomplete", it only means that each is looking at a different scope of work. In general, quality of practice is self-correcting in that the market place will ultimately reject poor quality work.

CONTINUING EDUCATION

15. Continuing education ___ geologic practice.

improves	54%
greatly improves	29%
slightly improves	13%
does not affect	1%
(No Answer)	4%

16. In the past two years I (the average geologist) have attended:

- 1-2 short courses
- 1-2 symposia
- no college classes
- 1-2 internal training classes
- 3-5 professional society meetings

17. Continuing education should be:

Voluntary, with guidelines from the Board	47%
Required by law	31%
Voluntary, up to the individual	19%
(No Answer)	4%

Comments:

- *Should be one of the ways to keep a license in force.
- *Requirement of continuing education is a cumbersome bureaucratic response to a non-issue. Requiring formal continuing education will not really address the issues. In reality, any interaction with others of the same profession will result in a continuation of the learning process.
- *How do you manage the diversity of education required for all the different areas of specialization within economical limits?
- *We need continuing education, but the Board should not jump in and legislate. We should start a voluntary program based on coordination of the Board and professional societies. Set up a trial educational system. THEN let's evaluate after 1-2 years for possible further action. Let's not be hasty to put on a good show for the public and senators.

18. I would like to see the following applied toward continuing education:

Any course in a related technical subject	146
Attending field trips	114
Presentations at professional society meetings	108
Attending professional society meetings	108
Authoring professional papers	107
Regulatory topics	103
Management training/Quality control	89
Other	17
* Professional reports of high quality	
* Passing university courses	
* Technical writing classes	
* Self-study of journals, texts, etc.	
* Passing a quiz after listening/viewing audio-visual instruction tapes.	
* Home study correspondence courses	
* Short course symposia	
* Teaching at college or professional level	
* Updates in area of expertise - faults, landslides, water	
* Professional liability and loss prevention	
* A minimum of one course per year that is approved by Board.	
* Guidelines in purchase of related text books and technical magazines.	
* Special symposia approved by Board for continuing education.	

Comments:

- *Continuing education credit for drinking beer and gossiping?
- * Must receive B grade or better.
- * Give half credit for management/ QC, regulatory topics, authoring professional papers, presentations, and attending meetings.

19. If continuing education is made mandatory, how many actual hours should be required in a two year period?

11-20	30%
1-10	23%
21-30	23%
over 30	14%
No Answer	10%

Comments:

- *All grandfathered CEG's should be required to take extensive CEU's immediately to nullify criticism from the State. AEG could set up this refresher course.
- *Number of hours dependent upon what types of continuing education would qualify (see no. 18).
- *How much is too much? How about the experts who still have no common sense?

Continued on page 6

20. Who should administer continuing education?

Up to the individual	56 responses
Board of Registration	54
Professional societies	52
Accreditation service	20
Other	14

- * Joint sponsorship.
- * Board should regulate, professional societies should provide.
- * Under Board review.
- * Should not develop a bureaucratic expensive procedure-self-training monitored by Board may be OK.
- * Individual should certify under penalty of perjury to a professional society which should in turn certify to a Board.
- * Up to individual with checking by the Board.
- * Responsibility of individual to report to Board.

21. Regarding continuing education, AEG should:

Encourage voluntary continuing education	125 responses
Provide short courses	122
Keep attendance records at monthly meetings	28
Make it mandatory for membership	18

Comments:

- * AEG can't afford the drop in income (if it were mandatory).
- * Belonging to AEG is not a requisite for being a CEG.

THE REGISTRATION EXAM

22. Does the exam adequately address competence for practice ?

RG	yes	37%	CEG	yes	43%
	no	27%		no	20%
	undecided	25%		undecided	24%
	no answer	11%		no answer	12%
	RGP	yes	6%		
		no	4%		
		undecided	46%		
		no answer	45%		

23. Should the exam be made:

RG	harder	8%	CEG	harder	14%
	same	54%		same	49%
	easier	8%		easier	4%
	no answer	30%		no answer	33%
	RGP	harder	4%		
		same	17%		
		easier	2%		
		no answer	77%		

Comments (22 and 23):

- *It is not a question of difficulty. The exam should be more relevant.
- *More realistic exam.
- *Exam should be relevant to actual problems addressed in professional practice NOT sophomore structural geology.
- *Exam difficulty isn't the issue if you are trying to evaluate competence.
- *Exam should address issues pertaining to the practice, not trivia.
- *Exam should be abolished. It doesn't do any good.
- *Areas of expertise must be defined and covered on exam. Civil Engineering must be deleted.
- *RG exam is becoming more a test of speed rather than knowledge.
- *More funding should be provided for exam appeals and reviews.
- *Exam Committee members should consist of at least 75% registered by examination.
- *It's difficult enough, the problem is content re: professional ethics, which is missing from the exam.
- *Exams should be de-emphasized. The Board should rely more on direct review of applicant's work and follow up through the years.

*Competence on the exam and competence in the profession will never necessarily correspond. The issue of competence is mainly a question of how honest the professional is about defining her or his own limitations.

- *No exam. Look at people's credentials.
- *Exam -deleted preferably. More practical or applied.
- *More effort to make exam practical, based on real world situations. Information on how reports are often inadequate could be used to beef up the practical side of the exam.
- *No, it's overkill.
- *Too academic.
- *Made different.
- *Change format to more accurately reflect professional practice problems.
- *Degree of difficulty isn't the issue so much as content and priority. Exam is a structure and trivia test.
- *RG exam should include some sort of field mapping. Most importantly, exam should include analysis of a geologic problem where interpretations based on clear evidence should be presented.

24. Is certification as an engineering geologist adequate to practice in hydrogeology?

No	37%
Yes	35%
Undecided	22%
No Answer	6%

Comments:

- *Yes, if hydrogeology questions are a required part of the exam.
- *Certification is meaningless.
- *I would not recommend another exam.
- *CEG exam may not be appropriate for hydrogeology practice.
- *Recommend a Geologist-in-training (GIT) exam to be taken immediately following school.
- *Hydrogeology is no more specialized than fault investigation or landslide investigation. If we license hydro specialty, where does it end? We have a good workable system.

25. Is a separate certification for hydrogeologists needed?

No	36%
Yes	34%
Undecided	21%
No Answer	10%

Comments:

- * Probably, with the increased demand for contamination studies.

GENERAL INFORMATION

26. I hold the following licenses in California:

- 96 RG by exam
- 47 RG by grandfathering
- 84 CEG by exam
- 39 CEG by grandfathering
- 3 RGP by exam
- 2 RGP by grandfathering
- 18 Not Registered
- 8 Other Licenses: RCE, GE, RG in other state.

- Additional comments: * The present system is imperfect, it is true, but without registration it would be infinitely worse.
- *The best way, in my opinion, to deal with many of the problems besetting our field is to demand more vigorous review of all reports by independent reviewers.
 - *The current geology registration act must be changed from a title act to a practice act which defines geology and engineering geology. Then geologists must stay within their areas of expertise as defined by the Government Business and Professions Code.
 - *I had to pass all of the various city and county local exams to practice before the State registration. The one exam (State) was a welcome relief.
 - *Maintaining an aggressive lobbyist effort is essential to the preservation and continued growth of the Board.

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Ninyo & Moore
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Stephen W. Jensen
Principal Geologist

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