ASSOCIATION OF ENGINEERING GEOLOGISTS

Southern California Section

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NEWSLETTER – August 2003

DATE: Tuesday, August 12, 2003
LOCATION: Stevens Steak House, 5332 Stevens Place, Commerce (323-723-9856)
TIME: 6:00 pm--Social Hour, 7:00 pm—Dinner, 8:00 pm--Talk
RESERVATIONS: Call (949) 253-5924 ex. 564 by 5PM Friday, August 8.
COST: $25 per person with reservation, $30 at the door, $12 for students.

SPEAKER: Shari Christofferson
TITLE: Determination of Paleoearthquakes, Slip per Event Data, and a Holocene Slip Rate for the Puente Hills Blind-Thrust Fault, Los Angeles, California

ABSTRACT: The Puente Hills thrust fault (PHT), which generated the 1987 M 6.0 Whittier-Narrows earthquake, is an active blind-thrust fault that lies directly beneath downtown Los Angeles, extending ~ 40-50 km from Beverly Hills to Fullerton, California [Shaw and Shearer, 1999]. Blind-thrust faults have in the past represented an ill-defined seismic hazard because traditional methodologies for acquiring paleoearthquake information require the fault in question be exposed at the surface. In this study, we developed and tested a multi-disciplinary methodology for assessing the earthquake histories of blind-thrust faults, focusing on the forelimb growth triangle of the Santa Fe Springs anticline associated with slip on the PHT. A hollow-stem and bucket-auger borehole transect excavated across the upward projection of the growth triangle identified on petroleum industry and high-resolution seismic reflection profiles exposed a discrete, upward-narrowing zone of south-dipping strata. Stratigraphic correlation across this transect revealed four stratigraphically discrete intervals that show southward thickening, or growth, within a 250-125 m wide zone. Each growth section was deposited after temporally separate slip events on the PHT, revealing evidence for four paleoearthquakes in the past 11,000 years. We have determined slip in each event to between 1.5 and 5 m. These data suggest the PHT ruptures in earthquakes greater than magnitude 7. The minimum slip rate on the Santa Fe Springs segment is 1.1-1.6 mm/yr accommodating ~ 15-30% of the geodetically measured north-south shortening rate across the Los Angeles basin.

BIOGRAPHY:

Ms. Shari Christofferson recently finished her Master's Thesis on the Puente Hills Thrust Fault at University of Southern California and is now Staff Geologist at Leighton and Associates' Irvine office. Working with the Active Tectonics group at USC, headed by Prof. James Dolan, she has been involved with collaborative research on a number of southern California's active faults and has taken part in mapping of the surface ruptures produced by the 1999 Hector Mine and 1999 Izmit, Turkey earthquakes. She is currently enjoying the challenges of working at the interface of science and society as a consulting geologist. This paper was co-authored with Dr. James Dolan (Dept. of Earth Sciences, USC – Los Angeles), and Dr. John Shaw (Dept. of Earth & Planetary Sciences, Harvard University).

CHAIR'S COLUMN

By Tania Gonzalez

Great talks and joint meetings with other geological societies in the southland have certainly helped increase attendance at our last two gatherings. This past month, Eldon Gath spoke to approximately 90 attendees at our annual joint meeting with the South Coast Geological Society in Costa Mesa. His talk regarding uplift of the Puente Hills and Santa Ana Mountains generated a substantial amount of interest and discussion, exactly what Eldon was hoping for. This month we will be talking about another buried thrust system that has made headlines in the last few months – this time under the Los Angeles region. It is only appropriate, therefore, that for this meeting we will meet again at our usual venue in the City of Commerce.

Next month we will not have a local section meeting – instead, plan to attend the National meeting. That's right – only one month left before the Annual AEG meeting in Vail, Colorado, which will be held from September 15 through the 21st. The people who have put together this year's meeting have done an outstanding job with a very exciting program. At last count 210 papers had been submitted, and all four simultaneous sessions for Wednesday (Sept. 17), Thursday (Sept. 18) and Friday (Sept. 19) are full. The fall colors this time of year in Colorado are beautiful and the hotel is located in a great setting to appreciate the aspen colors. As part of the evening activities, on Wednesday, Sept. 17, participants can take a gondola ride to the top of Vail Mountain, where dinner will be served. They also have also organized seven very interesting symposia, eight exciting field trips and five guest field trips. One of the symposia will deal with accreditation of engineering geology and geological engineering programs. AEG will be giving a special award for popularization of engineering geology to Sarah Andrews who has been writing articles for the AEG News (go back and check your last three issues of AEG News). **Make sure that you register by August 15th** to receive the conference rates at the Vail Marriot Mountain Resort. Refer to the July issue of AEG News for the full details regarding the meeting and the registration form. You can also obtain information regarding the meeting by pointing your browser to www.aegweb.org.

At Vail, you will get a chance to buy a copy of the new case histories volume edited by Doug Boyer, Paul Santi, and Pat Rogers. This volume is entitled "Engineering Geology in Colorado: Contributions, Trends, and Case Histories". It contains 50 papers and can be purchased on disk for $30. This is the fifth publication in AEG's series on case histories (joining Washington, Oregon, Northern California, and Southern California).

For those of you that like to plan ahead, the First Shlemon Conference on earth fissures has been scheduled – put it on your calendar! The organizers of this event, Jeff Keaton and Bill Haneberg, have announced that this conference will be held in El Paso, Texas from April 1-3, 2004, and includes an all-day field trip. We hope that this will be the first of many successful Shlemon conferences!

The membership renewal forms have now been mailed along with ballots. I encourage all of you to renew! Scott Burns, AEG President, reports that AEG has turned the corner, is growing and is on a very positive course to again become the leader organization of our profession. AEG's web site continues to improve, and you can now buy AEG items, renew memberships, and register for meetings on the web.

AEG is now one of the member societies of the American Geological Institute. They are the umbrella organization that brings all geological societies together. John Williams, one of the past presidents of AEG, has been selected as president-elect of AGI. AEG has joined an AGI-led coalition of societies to help preserve the congressional funding of the USGS. We have also joined another coalition to help increase diversity in the geosciences. AGI puts together a monthly update of events and bills of geological interest being discussed by the policy-makers in Washington D.C. Some of these briefs I have been including for your information in these newsletters (see Pages 3 & 4). However, should you want more information, you are always welcome to go to the AGI website (agiweb.org). One of the great tools at this web site, especially useful if you give power point presentations to schools or other organizations is AGI's Earth Science World Image Bank. You can download for free images of geology to use in your talks. Each year AGI puts together Earth Science Week, which AEG is participating in this year. AEG is also becoming more active in the International Association of Engineering Geologists, and all AEG members are affiliates of IAEG. Check out the IAEG newsletter, which is posted on the aegweb.org site.

2003 MEMBERSHIP RENEWAL

You should be receiving your 2004 dues statement from AEG National in the next month or so, including a ballot for new officers. Please send in your membership fees and filled-in ballot as soon as possible. It helps AEG to cut down costs if they do not have to send you a reminder. If you do not receive your statement, or are unsure about your membership status, please contact AEG Headquarters aegweb.org, or Tania Gonzalez. We are currently looking for a new Membership Chair. Please contact Tania Gonzalez if you wish to volunteer.

YEAR 2002-3 CONTRIBUTORS

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YEAR 2003-4 CONTRIBUTORS NEEDED

Contributions from corporations and individual members for 2003 will be greatly appreciated. Contributors will be listed in our newsletter throughout the year and can post their logo or business card in the newsletter if so desired. Please mail contributions made out to **AEG** to our section chair, Tania Gonzalez.

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STATE and NATIONAL NEWS

Legislators at both the state and national levels have been working on their respective budgets. In California, one of the most important issues this month was whether or not the State budget would be approved before the State legislators left Sacramento for the summer, and how much of the California Geological Survey's funding would be cut in the process. In the end, the budget was approved on July 29th, and the cuts to the CGS were not as severe as most feared. While this was going on, Senate Bill 1079 was submitted to the floor for approval. The bill calls for the reduction in number of years experience to take the RG exam to 3 years with a Bachelors degree, and 2 years with a Masters degree. Many Southern California AEG members have expressed the concern that 3 years experience with undergraduate work is not enough time for someone to experience a variety of projects and tasks, from proposal preparation, through fieldwork, and report writing, and therefore are not ready to sit for the exam. The Senate is expected to consider this bill as currently written when they get back in session after August 18th. What do you think? Let Joe Cota (cota@earthlink.net) and Hugh Robertson (hr@robertsongeotechnical.com) know your position on this, as we are trying to decide what to do regarding this proposed bill.

On July 17, AGI posted information regarding the proposed cuts to geological programs at the national level, and submitted the following information (for additional information and updates refer to the AGI web site under "Government Affairs" www.agiweb.org):

Geoscience-related agencies covered by the Interior and Related Agencies appropriations bill took a beating in the president's fiscal year (FY) 2004 budget request. But the House and Senate Appropriations Committees have restored cuts to the U.S. Geological Survey and partially restored deep cuts to the Department of Energy's oil and gas research programs.

The Interior and Related Agencies bill (H.R. 2691) made it through the House Appropriations Committee on June 25th and is awaiting floor action. It passed the Senate Appropriations Committee as S. 1391 on July 10th. Although Senate floor action is possible before the August recess, September seems more likely with a House-Senate conference to iron out differences getting underway late that month in the waning weeks of the current fiscal year. The Interior bill is one of the most important for the geosciences because it funds not only several key geoscience-related bureaus of the Department of the Interior -- the U.S. Geological Survey, Bureau of Land Management, Minerals Management Service, and National Park Service -- but also the U.S. Forest Service (part of the Agriculture Department), the Department of Energy's Fossil Energy R&D programs, and the Smithsonian Institution.

The House bill would provide USGS with $935.7 million, nearly 2% above FY 2003 and 4.5% above the president's request. The Senate bill provides $928.9 million, slightly less than the House but still above the previous allocation and the president's request. The House report expresses frustration with the administration's repeated attempts to cut the USGS budget: "For the third year in a row the [House Appropriations] Committee has restored a number of high-priority research programs that were proposed for reduction or elimination. The Department [of the Interior] has placed a high-priority on both cooperative programs and programs that are outsourced to the private sector. For the most part, the programs that are being proposed for reduction or elimination in fiscal year 2004 are the very programs that meet these criteria. More than any other Bureau in the Department, the Survey has been a leader in

the development of cooperative programs and outsourcing its activities. The Committee believes that Bureaus that are successful in implementing these policies should be rewarded and not penalized."

Proposed funding for specific programs is discussed in more detail below:
USGS Geologic Programs -- Geologic programs would receive $231.4 million in the House bill, slightly below FY 2003 levels but 4.5% above the president's request. The Senate bill would provide $236.9 million, up 1.5% over FY 2003 and up 7% over the request.
Advanced National Seismic System -- Both the House and Senate bills restore a $1.9 million proposed cut to the Advanced National Seismic System, and the Senate bill provides an additional $0.5 million "to expand the earthquake program's capabilities."
Geologic Mapping -- The House bill restores all but $0.5 million of the administration's proposed cut to the National Cooperative Geologic Mapping Program and also provides $0.5 million for the Great Lakes geologic mapping project. The Senate bill does not fund the latter but restores the cut to the geologic mapping program and adds $0.5 million on top.
Mineral Resources -- One of the largest cuts proposed for USGS by the administration was to the Mineral Resources program. Both the House and Senate bills would restore funding for this program with the House version putting back $9.1 million (and adding $1.3 million for aggregate and industrial minerals studies) and the Senate restoring the full $11.2 million cut. The House report states: "The Committee strongly disagrees with the proposed reduction in the Survey's mineral resources program. Minerals and mineral products are important to the U.S. economy with processed minerals accounting for over $370 billion to the economy in 2002. Mineral commodities are essential to both national security and infrastructure development. Mineral resources research and assessments are a core responsibility of the survey. . . For these reasons the Committee has restored the proposed cuts to this high-priority program."
USGS Water Resources Programs -- The House bill would fund the Survey's water programs at $215.2 million, up nearly 4% above FY 2003 and up 7.5% above the president's request. The Senate bill is not quite as generous, providing $209.5 million, still slightly above FY 2003 and nearly 5% above the request. Both bills restore roughly $6 million in funding for the Water Resources Research Institutes, which were zeroed out in the president's budget, and restore cuts to the Toxic Substances Hydrology program. And both the House and Senate reports call for quite a number of site-specific studies.
USGS Mapping Programs -- The Survey's mapping programs would receive $130.2 million from the House and $128.9 million from the Senate, both levels are below FY 2003 levels (by 2% and 3% respectively) and above the president's request (by 8% and 7%).
National Map -- The House report includes extensive language supporting the Survey's National Map project, laying out its justification and emphasizing the importance of partnerships. The House report notes that funding is restored for "data collection activities through partnerships and contracts with the private sector,…cooperative topographic mapping to expand and enhance initial National Map implementation through partnerships," and geographic analysis and monitoring related research, among others.
EROS Data Center -- The House report also emphasizes the importance of the USGS EROS Data Center and supports USGS efforts to "convert its archived remote sensing data from outdated storage media to disk-based storage [in order to] … provide access to users more efficiently and at lower cost." Noting the data center's designation as critical infrastructure for homeland security, the report also supports "implementation of a continuity of operations capability… utilizing `remote mirroring' technology, which will eliminate a single point of failure for data storage infrastructure and ensure full recovery with zero data loss from any potential outage."
The Senate report notes the restoration of funding for data collection and geographic analysis as well as taking exception to the administration's proposed $6.6 million cut associated with government-wide information technology savings, noting that this is an amount much greater than proposed for agencies two to four times the Survey's size. The Senate report also notes a $3 million cut for the AmericaView program and a $1.4 million cut associated with closure of the Center for Integration and Natural Disaster Information (CINDI) program and transfer of its functions elsewhere. Other increases above the president's request in the House bill would go to global dust event impact studies and the national coastal program.
Natural Gas Technologies Programs -- The House bill includes $36.5 million for natural gas research, down 22% from FY 2003 but 35% higher than the president's request. The Senate bill would provide $41.9 million for natural gas programs, down 11% from FY 2003 but up 58% over the request. Both the House and Senate bills deny the administration's request to transfer natural gas funding to hydrogen research. The House report "rejects the premise that domestic natural gas production and infrastructure research and development should be cut at a time when natural gas demand is increasing and supplies are already insufficient to meet demand. Similarly, it is an unwise policy decision to balance a new initiative to turn natural gas into hydrogen (and potentially adding more stress to natural gas markets) by cutting the programs necessary to stabilize natural gas supplies."
Oil Technology Programs -- The House bill provides $32.2 million, down 23% from FY 2003 (and down 39% from FY 2002) but a whopping 215% higher than the president's request. The Senate bill recommends $34.5 million, down 18% from FY 2003 but up an even more whopping 230% from the request.

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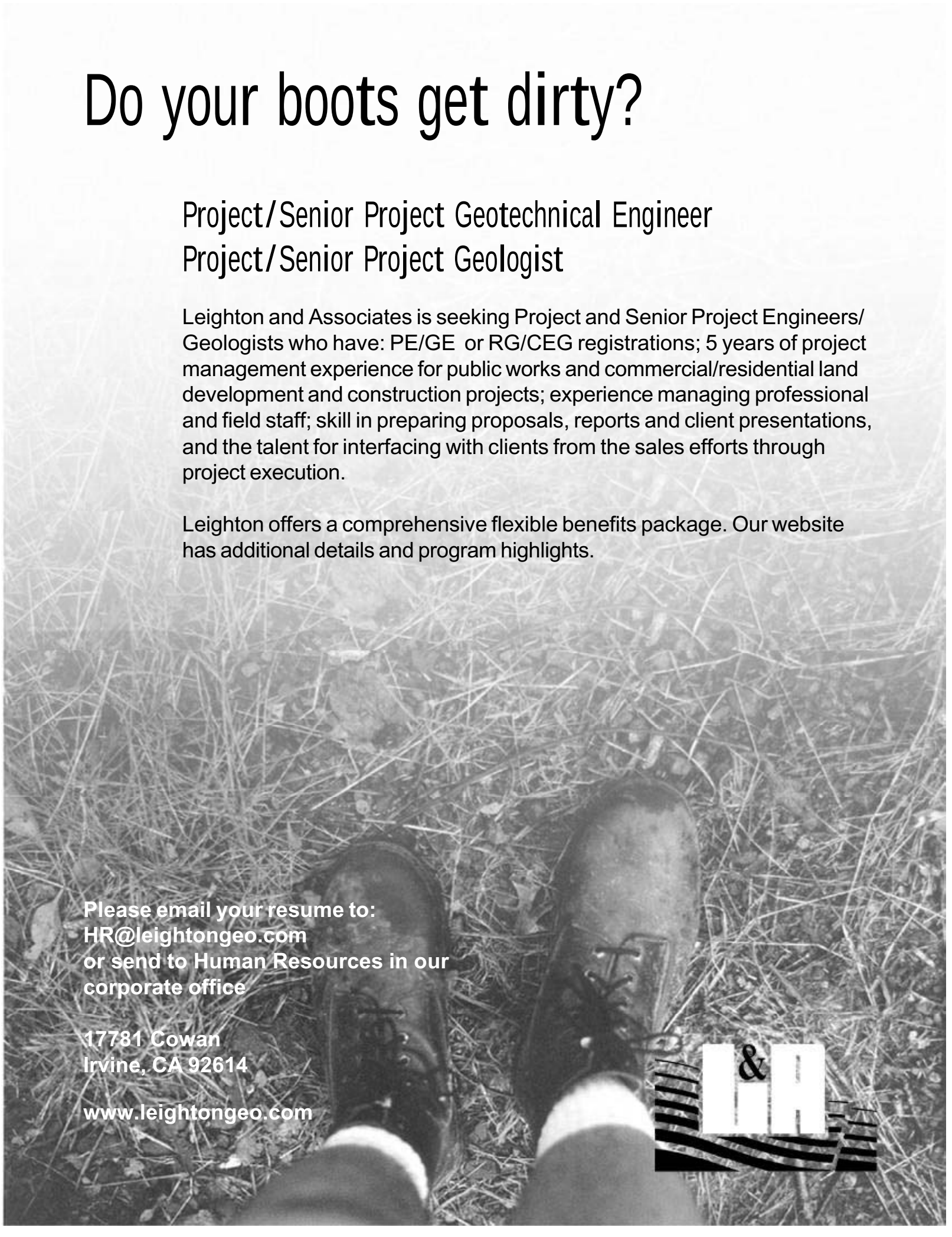

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