Association of Engineering Geologists
"Serving Professionals in Engineering, Environmental and Groundwater Geology Since 1957"

Southern California Section
NEWSLETTER - May 1997

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Dinner Meeting Tuesday May 13th

☐ Stevens Steak House
5332 Stevens Place
City of Commerce

☐ Cost - $25.00
($10.00 for full-time students with valid I.D.)

☐ For reservations call Pat Stewart at Montgomery Watson
at (818) 568-6161 by Friday May 9th

Make reservations by Noon on the Friday before the Meeting

☐ 5:30 Social Hour & One-Half
☐ 7:00 Dinner
☐ 7:30 Announcements
☐ 7:45 Program

Program

TOPIC Landslides in Southern California: A Different Perspective

SPEAKER Gary S. Rasmussen
Engineering Geologist/President
Gary S. Rasmussen & Associates, Inc.

MAP to Meeting

Stevens Steak House
5332 Stevens Place
City of Commerce

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5332 Stevens Place
City of Commerce

Deadline for submittals to the May Newsletter: May 30th

Next Meeting June 19th
Program: Topic & Speaker

Landslides in Southern California: A Different Perspective
Gary S. Rasmussen

The presence of landslides in southern California is a common occurrence and has been recognized since the inception of engineering geology practice. In fact, the Palos Verdes landslide lawsuit against the County of Los Angeles in the early 1950's led to defining the practice of engineering geology as we know it today. A typical landslide as recognized in southern California today generally occurs in soft rock or sediments. Landslide failures within these weak sedimentary rocks and more massive, less consolidated soils and residual slopes have been extensively studied and analyzed in the literature. Nearly every type of landslide as described in the recent Transportation Research Board Special Report 247, except for mega landslides in hard bedrock units, such as the igneous and metamorphic rocks comprising the San Bernardino Mountains. In both the literature and typical site specific engineering geology reports for construction projects, large bedrock landslides in granite rocks in southern California have not been recognized.

Less well recognized than landslides in claystone, siltstone, schist and metavolcanic rock, but nearly as prevalent, are landslides in the coarser grained, more consolidated rock terranes, such as sandstones and conglomerates. Many ancient landslides, which are not normally recognized in this type of rock occur in the Potato Sandstone, a consolidated sandstone and conglomerate unit located between the south branch and north branch of the San Andreas fault in the San Bernardino area. Numerous other landslides occur in the less consolidated and coarse-grained upper unit of the San Timoteo Formation, as exposed in the Redlands area south of Grand Terrace, Loma Linda and Redlands. Examples of large landslides within granitic terrane are the Rim Forest and Running Springs landslides, numerous additional unnamed landslides in the San Bernardino Mountains, numerous landslides along the detachment surface in the Santa Rosa Mountains, and variations of this type of landslide. The Black Hawk flow in the San Bernardino Mountains and the Martinez rock flow in the Santa Rosa Mountains are examples of smaller landslides emanating from much larger and older landslides. Most of these larger and older bedrock landslides have not been studied or even shown on geological maps. Other atypical landslides in the north portion of the San Bernardino Mountains are blocks above apparent detachment surfaces, such as Black Hawk Mountain which has moved away to the north from the rest of the San Bernardino Mountains, and the apparent shallower failures into the rift created by the Helendale-Pipes Canyon fault passing under the San Bernardino Mountains northeast, east and southeast of Big Bear.

Although landslides have many factors which contribute to their movement, probably the most universal triggering factor is the presence and amount of groundwater. The current climate in southern California is extremely dry compared to most of Pleistocene time. Currently, sea level is at its highest level that it has been during Pleistocene time, except for the Stage 5e period approximately 120,000 years ago. This indicates our climate has only been dryer than it currently is at one time in the last 1.6 million years. Most Quaternary geologists agree that as little as 12,000 to 15,000 years ago, rainfall worldwide was nearly double its current amount and sea level was 300 to 400 feet lower than the current level. If you double the average rainfall of today, then a 1,000-year rainfall or a 5,000-year rainfall could easily be 10 times higher than that. Imagine what kind of slope failures would be generated in southern California by rainfall of more than 100 inches a year, compared with the current average of 15-30 inches a year.

Most of the landslides we recognize today as being Holocene in age are merely small portions of much larger landslides that initiated during these wetter climates. On top of these massive quantities of rainfall and, therefore, increased ground-water levels throughout the mountains and valley areas, add the large seismic forces released during a M7 earthquake along the San Jacinto fault, or a M6+ earthquake along the San Andreas fault centered at the very toe of these very steep land masses. That is the setting under which most of these mega landslides in bedrock probably originally occurred.

Most of the landslides in southern California within either well consolidated or poorly consolidated and weak rock are characterized by planar failure surfaces. Most of these are translational block failures as opposed to arcuate circular slip failures, which are more common in homogeneous materials such as fill. Most text books will state that high strength rocks, which ping when hit with a hammer, are likely to be stable. This, of course, fails to recognize that granitic blocks of material can be situated on weak planar features. These conditions apparently exist at many places within the San Bernardino Mountains, as evidenced by the large landslides such as Rim Forest and Running Springs. Entire blocks with dimensions in excess of a mile per side can move downslope relatively intact, leaving what appears to be in-place very weak rock. Several years ago, we published a paper suggesting numerous mega landslides in San Gorgonio Pass covering portions of the San Andreas fault. The mechanism for these failures was not apparent and nothing in the literature provided any clues as to why such large landslides exist there. Now it appears they may be sitting on a weak planar feature, such as an old deformed detachment surface.

A great deal of geologic mapping has taken place in the Mojave Desert and southern California in the last 15 years and much more insight has been gained on the geologic history of southern California from the Miocene to the present. Prior to 4 million years ago, most of southern California was in a state of extension. Numerous, very large and continuous detachment surfaces which originated during this extensional period have been found and documented. One such detachment surface has been identified in the Santa Rosa Mountains. Aerial observation of this detachment surface clearly shows many very large landslides slipping away from the mountains along this now inclined and elevated detachment surface. It is suspected that some of the large landslides along the north side of the San Gorgonio Pass have similarly failed along a buried detachment surface, which has been deformed and tilted by movement along the San Andreas fault through this area. A single detachment surface originally continuing well west of Santa Monica has been suggested in the past and a remnant of this detachment surface along the south flank of the San Bernardino Mountains is a very plausible mechanism for the mega landslides in existence there.

Because of the problems in determining characteristics of fractures, fracture patterns and slip surfaces, which can be easily missed in typical subsurface explorations, and due to the complexity of large landslides and postulated geologic conditions at the origin of some of the very large landslides in southern California, it is suggested that the most reliable method for finding old landslides, as well as more recent landslides, is by geomorphic analysis and geomorphic mapping. Some of the main indicators for locating landslides include recognition of very young active features which are nearly universally small portions of larger landslides; arcuate shaped drainages, particularly near the upper elevation of a steeply sloping area; lobate toe areas, particularly where drainages have been displaced in an arcuate lobate manner reflecting deflection around the toe of a landslide (prime examples being readily observable in Las Flores Canyon near Malibu); and deep erosional scars parallel to each other in a relatively straight line, usually enclosed within the more arcuate boundaries of the bounding landslide feature. Even hard rock, such as granite, when displaced by block glide movement or other landslide processes typically have these very straight linear drainages on steep faces reflecting the abundant fractures and loss of strength of material once it has slid. Another indicator to look for is unusually large depositional areas along otherwise relatively uniform drainage areas (in other words, voluminous quantities of sediments, which are anomalously high for the small watershed area, particularly compared to immediately surrounding areas).

Most of these features will be demonstrated in this presentation by aerial photographs of landsliding, including Rim Forest, Black Hawk and Martinez landslides and landsliding in the Santa Rosa Mountains, San Timoteo Canyon, Helendale-Pipes Canyon fault rift, Black Hawk Mountain, and McKinley Mountain.

Gary has over 30 years of experience in engineering geology in Southern California. Most of Gary Rasmussen's professional work has dealt with faults, seismic hazards, and landslides in the western United States. In addition to normal engineering geology procedures, the specialties geophysics and ground water geology have been extensively used to provide supplementary information. He has been guest lecturer at several Universities in southern California and has taught engineering geology at the University of California at Riverside.
Board of Directors’ meeting a couple of weeks ago about ASTM. There has been a flurry of guidelines generated by ASTM staff and members regarding geological and environmental practices. The AEG Board of Directors unanimously agreed to a resolution opposing ASTM Standards dealing with geologic investigations, environmental remediation, etc. Eklon has been attending some national meetings on this issue and is strongly opposed. Eklon Gath and Dave Ebersold will elaborate on this issue at the next meeting and will be reported in this newsletter. Many other geological organizations are also holding ASTM in contempt for getting out of control generating to too many guidelines.

Our legislative analyst/lobbyist, Judy Wollen, provided the following information to communicate to the section:

AB 376 is still not set for hearing as yet but should be by the end of this week because of the May 30 deadline for fiscal bills.

SB 479 was just set for hearing for next Monday May 5th. Sorry for the short time frames, but things are moving very fast now that the legislature finally decided to get down to business. The letters can be the same as the letters sent to the policy committee. You can address the letters to the Chair of the Appropriations Committee, Senator Johnson, State Capitol, room 2206, Sacramento, CA 95814; and cc: members of the Senate Appropriations Committee and Senator Dede Alpert, Room 4061. If you fax them to me by tomorrow I will hand deliver.

Remember when you write the letters to say RE: SB 479 (oppose). Also let them know the date of hearing. If you have any questions call me. You can also send the letters for AB 376 but we will not know the hearing date yet but I can deliver when it is time.

Chairman’s Column
Dave Ebersold

After my long-winded summary of current political/legislative issues at the last meeting, I made the comment to someone that it is quite difficult to discuss these issues in a meaningful way in a brief period of time. The comment that I received back was that very few people understand or even care about these issues. Well, that comment caused me to reflect back just a couple of years to a time when I too didn’t care or understand a thing about legislative issues that affect our profession. In fact, I recall listening to Buzz Spellman, Bob Hollingsworth, Rob Larson, Eklon Gath and others, not understanding much, if anything, of what they were saying. I just wished that when that one last issue was resolved, I would be able to go to an AEG meeting without feeling guilty about not having written all of the letters to legislators that had been requested. And now, curiously, I find myself on the other side of the podium, hoping that by talking about these things just one more person will realize that our profession is under attack from those who would like to see our registration destroyed (sunsetting), others who would like to see us forced to unfairly compete with a State agency for work and be required to indemnify that agency against their own mistakes (AB479, AB376, and the PECG Initiative), and still others with equally dangerous agendas that we don’t even know about yet. It is for these reasons that I have recently written letters on behalf of AEG-SC against AB479, against AB376, and in support of revised consulting services procurement policies in Orange County. It is for these reasons that I have agreed to participate in a liaison program with CEL-SOC. It is for these same reasons that I have dedicated weekends to the formation of a statewide advocacy group for geologists.

And I am humbled by the fact that in these activities, I have done nothing more than any other Chairman of our organization.
Coastal Engineering
Transportation Geology
General Engineering Geology Topics
Environmental Investigations / Clean Ups
Ground Water Investigations / Modeling
Risk Based Assessment
Landfill Technology
Stream Restoration
Fluvial Geomorphology

Topics other than the above suggestions will be considered. Presentations based on case histories are encouraged. Presentations will be limited to 20 minutes each. Poster session will be provided during the exhibitors luncheon. Abstracts should be no longer than 250 words and should be sent to the address listed below.

Abstract Submittals Due May 15, 1997, E-mail preferred:
aegjuliek@aol.com or mail with disk (version MS Word 6) to:

AEG'97 c/o Julie Keaton
130 Yucca Drive
Sedona, Arizona 86336-3222
520-204-1553
fax: 520-204-5597

MINUTES - MARCH 23, 1997, CCGO ORGANIZING MEETING (ed. The current progress on organizing geologists in California) (held at Montgomery Watson in Pasadena, 9:30 AM - 4:00 PM; Dave Ebersold led meeting)

I. INTRODUCTIONS OF ATTENDEES:

Imelda Cragin (President, AAPG - Coast Geological Society / AWG) Bob Tepel (Past President, AEG) David Bieber (Chairman, Sacramento Section, AEG) Betsy Mathieson (Chairman, San Francisco Section, AEG) Dave Ebersold (Chairman, Southern California Section, AEG) Drew Haney (Member, Southern California Section, AEG) Rob Larson (California Section, AIPG) Dave Seymour (Past President, South Coast Geological Society)

Rob Larson distributed 1/2-inch-thick, bound collections of current State Senate and Assembly bills he downloaded form the Senate web site using several key words pertinent to the practice of geology.

Reviewed and confirmed our approval of the Mission Statement and Vision Statement drafted at the first organizing meeting:

Mission Statement:
The California Council of Geoscience Organizations advocates the use of sound geologic knowledge and practice by proposing, reviewing, and monitoring statutes, regulations, and public policies.

Vision Statement:
The Council will be a leader of recognized integrity in advancing programs and legislation that take into consideration California’s diverse geologic conditions, advocate knowledgeable use of resources, and work to reduce the impact of geologic hazards.

II. APPROVAL OF MINUTES OF 2/15/97 MEETING
Approved as written.

III. REVIEW OF FUNCTIONAL CONCERNS

Reviewed paragraphs edited by Dave Bieber based on the discussion of functional concerns at our January 11 meeting:

The California Council of Geoscience Organizations works for the sound practice of the geologic sciences in the public interest. The council works to provide balanced information to lawmakers, regulatory agencies, and the public regarding the economic, environmental, and human costs associated with geologic matters. CCGO evaluates and comments on regulatory and legislative proposals that relate to geologic hazards, the use of

CALL FOR TECHNICAL PAPERS

For the 1997 AEG Annual Meeting Hosted by the Oregon Section

40th Annual Meeting Being held in Portland, Oregon

September 28 through October 4, 1997

Hotel: Portland Hilton Hotel (need to call the hotel directly) 503-226-1611.

Paper and Poster Presentation Topics should include:

Field and Laboratory Testing Developments
Landslides and Slope Stability
Seismic Hazards and Remediation

I would like to say a word about meeting reservations. Last month, 21 people who made reservations for our meeting at the Airel DID NOT SHOW UP! As a result, our section NEEDLESSLY LOST ABOUT $400 OF YOUR MONEY. As a result, I am requesting that those of you who made reservations but did not attend send in a check for $25. Additionally, I am considering a policy of billing no-shows as many other organizations do. Or we can never hold meetings anywhere but Steven’s Steakhouse. Or we can keep throwing away money. Any thoughts?

We’ve got some great activities going on this time of year. Our short course on photography and GIS was well attended and successful. I would like to thank Sue Tanges, our Short Course Chairperson, for planning and coordinating yet another great event. I would particularly like to recognize Woody Higdon who donated (once again) his time to teach this course to our members.

As of this writing, the field trip to East Side Reservoir is still a couple of days away but coming up fast. May 17th is the date for the Dibblee trip to the St. Francis Dam Site. Speaking of the Dibblee Foundation, AEG-SC this year again donated $1,000 to assist in publishing five additional map sheets in the vicinity of the St. Francis Dam (that’s $400 less than we could have donated prior to last month’s meeting). We are accepting applications for the Marty Stout Scholarship ($500) until July 15th. The only requirement to apply is that you have to be a Student Member of AEG. Call me at 818-568-6943 if you need a scholarship application. Also, now is a great time to add to this important fund. Donations can be made out to AEG and sent to me c/o Montgomery Watson, 301 N. Lake Avenue, Suite 600, Pasadena, CA 91101. The process of electing Section officers for next year is upon us. Joe Cota will be accepting nominations at the May meeting. That’s all for now. Hope to see you all in May!
Recognized that GRA (not represented at this meeting) is interested in competent practice of geology, with such practice perhaps not necessarily limited to RG’s, CEG’s, CHG’s. This issue needs to be clarified and addressed further with GRA representatives.

CCGO will not survive if maintaining licensure is the only goal.

If we have a strong presence in Sacramento, the sunset issue will go away.

We need to reach general public as well as legislators. One way is to talk at schools and to other groups, but what little of that’s happening now is on an informal basis. GSA is working for better public relations for geology.

Can involve member organizations in helping to address functional concerns (e.g., by having Executive Director include appeals and suggestions in newsletter articles for distribution).

“Regulatory Peer Review” is essential in improving the standard of geologic practice.

Need input on draft functional concerns from GRA and other organizations.

Additional discussion on Mission Statement and Vision Statement:

Public health and safety aspect is not in mission statement.

Mission Statement is goal. Vision Statement says how we’re going to get there.

Rob’s vision is to have CCGO protect geologists’ interests in Sacramento. He wants a strong Executive Director who will be CCGO’s chief spokesperson, who will testify on every relevant bill, and who becomes known as our representative in Sacramento.

At last meeting, some attendees expressed concern that we might give too much power to Executive Director.

Need to also ensure that we are serving groups like GRA that have diverse memberships.

The inclusion of a large number of groups in the organizational process has been beneficial in developing a broader, more encompassing organization. As a result, a clear path is emerging, although not every organization may join. In the very near future, we will all have to decide to either go together or not. May not be able to draw in every organization. GRA is an example: we are stronger with than without GRA, but will need to know sooner rather than later whether they are in agreement with the path that has been jointly developed. Also discussion of same issue relative to all other groups. Decided that this issue must be included as part of the strategic plan development.

Should get the many petroleum and mining geologists involved more. All disciplines of geology are interrelated. What’s good for one is good for all, in many respects.

Academic geologists will be able to promote geology as a major better if they have some knowledge of geology in business and industry. They can help with public outreach by educating students. Support may be available from geologic alumni associations.

Bylaws committee should check Bob Tepel’s version of bylaws for clause on how to handle dissenting opinion of a member organization.

IV. REPORT OF BYLAWS COMMITTEE (by Dave Bieber)

Bill Keese, lobbyist consultant, will report to Dave Bieber by 3/28 on logistics of incorporating CCGO (e.g. whether we should be 501c6 organization or something else).

Dave Bieber distributed latest draft of bylaws, which incorporates comments from several members.

Decided to defer approval of bylaws to next meeting. Everyone should read the draft and e-mail comments to Dave Bieber. Dave will e-mail final draft to everyone who has attended an organizing meeting, anyone else who wants one, and anyone whom any of us think should receive a copy.
Consider prewriting policies and guidelines for Executive Director positions. President and executive director have a sense of what the board wants before assuming their positions.

CDMG needs support/lobbying for funding for their programs, and Jim Davis will likely support us if we help them.

VII. REVIEW OF ACTION ITEMS

Dave Bieber will send copies of Bill Keese’s suggestions to Bob Tepel, Jim Jacobs, Imelda, Dave E., and Betsy M. and will plot a schedule for incorporation.

All attendees will send comments on today’s draft of the bylaws to Dave Bieber (by April 67).

Bylaws Committee will have a final draft of the bylaws for distribution by April 20 and for approval at the next meeting.

Strategic Planning Committee (Bob Tepel for AEG, Jim Jacobs (Chair) for AIPG, and Brian Lewis for GRA) to do a draft Strategic Plan.

Development Planning Subcommittee (Dave Seymour (chair) and Imelda and Dave Ebersold) will draft plan for selling CCGO to organizations and businesses. (Note: This committee replaces former Marketing Committee.)

Drew will work on recruiting more people to become active in CCGO.

Betsy will prepare meeting notes using Dave Bieber’s notes on disk and will-mail to Dave Ebersold by Tuesday morning (3/25/97).

Dave Ebersold will prepare Press Release.

VIII. SCHEDULING OF NEXT MEETING

Sunday, May 4, 1997 Betsy Mathieson’s house 197 South 13th Street San Jose

ZIP-A-DIP Combination protractor, scales and most efficient apparent dip calculator.

Only $4.00 each, 2-10: $3.50; 11+: $3.00; 50+: $2.50

Brochure describes ZIP-A-DIP, equal angle stereonet plotter, and stratigraph. PLEASE NOTE NEW ADDRESS BELOW!

Name __________ ZIP-A-DIP quantity __________ total cost __________

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To: ZIP-A-DIP, 3891 Ashford Dr. Eugene, OR 97405

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Land Engineering Geologist
Water Water Quality Specialist

Sanford L. Werner
Registered Geologist
Certified Engineering Geologist

21031 Blythe St., Canoga Park, CA 91304, (818) 998-8178
REGISTRATION FORM

A DAY IN THE FIELD WITH TOM DIBLEE

to be held at the location of the historic St. Francis Dam
on May 17, 1997, 9:30 am to 3:30 pm

Field trip leaders will include Thomas W. Dibblee, Jr.,
J. David Rogers, Ph.D., and Helmut E. Ehrenspeck

This once-in-a-lifetime event will include a geologic field trip and lectures, historical overview, awarding of the Dibblee Medal, a BBQ near the dam site, and an auction of Dibblee memorabilia. Each participant will receive a guidebook and an autographed copy of the Dibblee geology of the Warm Springs Mountain Quadrangle to be released on the day of the field trip.

Tom Dibblee’s field trip stops include the Paleocene marine San Francisquito Formation and the controversial contact with the overlying Oligocene nonmarine Vasquez Formation, remarkable megabreccia blocks of crystalline basement within the Vasquez Formation and antilinally folded Pelona Schist that abuts the dam site. David Rogers will present an historical overview and geologic tour of the dam site and discuss the events leading to the failure of the dam.

This event will be a fund-raising event for the Dibblee Geological Foundation, a not-for-profit organization. A portion of the cost may be tax deductible.

Funds are needed to continue the publication of Dibblee geologic maps.

The Dibblee Geological Foundation relies on donations for about 50 percent of the capital needed for publication. The other source of our funding is map sales. We receive no government funding. The publication of these maps will not continue without the support of geologists and other supporters like yourself. Please consider the Dibblee Geological Foundation to be one of your annual recipients of charitable gifts.

Name ______________________ Telephone (____)________ Fax (____)________
Address ______________________ City ______________________ State ___ Zip ______
Number attending _______ @ $100 each for a total of $ ___________
Also included is a donation of $100, $500, $1,000, $5,000, $10,000 _________________
Special recognition will be made on the map of your choice for individual donations of $500/corporate donations of $1,000.
Acknowledgment of your reservation and a map showing the meeting place will be sent upon receipt of registration.

Return the lower portion of this form with your check to: John R. Powell, c/o Fugro, 5855 Olivas Park Drive, Ventura, California 93003-7672, 805/650-7000 or JPowell@Fugro.com