

ASSOCIATION OF ENVIRONMENTAL AND ENGINEERING GEOLOGISTS

"Serving Professionals in Engineering, Environmental, and Ground-Water Geology"

THE ROCKY MOUNTAIN SECTION NEWSLETTER

www.aegrms.org

MEETING DATE

**THURSDAY
MAY 11th, 2006**

TIME

5:45 p.m. Social Hour
6:30 p.m. Dinner
7:30 p.m. Presentation

LOCATION

**Berthoud Hall, Colorado
School of Mines
1516 Illinois St.
Golden, CO 80401
See map below**

COST

\$20 Members
\$22 Non-members
**Students, Free first time,
then \$10**

RESERVATIONS

c/o AEG Reservation Line
(303) 264-1030
meetings@aeqrms.org
**BY NOON, TUESDAY
MAY 9TH**

Quaternary Surface Fault Rupture, Saddle Mountains Anticline, Near the Hanford Reservation, Washington

Michael W. West, Ph.D., P.E., P.G.
Michael W. West & Associates, Inc.

Subvertical, Miocene Elephant Mountain and older basalts in the north limb of the Saddle Mountains anticline are thrust over Plio-Pleistocene to Holocene fanglomerates and colluvium along the Saddle Mountains fault dipping 9° to 30° south. The 100± m thick section of fanglomerates exposed along the front of Smyrna Bench is syntectonic and records the growth of the Saddle Mountains anticline through folding and surface faulting from Pliocene through Pleistocene time. The transition from fold-dominated to fault-dominated sedimentation, beginning at the time of initial surface rupture on the Saddle Mountains fault, may be related to development of the Smyrna Bench graben south of the daylighting thrust fault tip. The Smyrna Bench graben developed in direct response to slip on the subjacent thrust fault, rather than as a massive block-glide landslide as previously interpreted. Graben development began ±100 ka with truncation of the debris flow sources and continued into the Holocene. Minimum normal fault slip rates in the graben are 0.16-0.33 mm/yr based on displacement of at least 6.5 m in the ca. 20-40 ka Washtucna paleosol. The vertical and horizontal components of slip in the graben should be equal to or less than vertical and horizontal components of slip on the primary thrust fault. Accordingly, resolution of at least 6.5 m of vertical displacement on a thrust fault with a 30° average dip yields minimum dip slip of 13.0 m on the fault plane in ~20-40 ka and minimum thrust slip rates of 0.33-0.65 mm/yr.

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Interpreted minimum slip rates are 2.3 to 9.4 times greater than those used in a 1993 probabilistic seismic hazard for facilities on the Department of Energy's Hanford Reservation.

Well-defined Pleistocene colluvial wedges in the footwall below the basal Saddle Mountains thrust fault, dipping 9° to 18° south, indicate maximum single event displacements of 2.6 to 4.5 m, corresponding to paleoearthquake moment magnitudes of 6.9 to 7.3. The estimate of paleoearthquake magnitudes based on maximum single event displacement is in agreement with magnitudes of 7.0 previously estimated from surface rupture length and segmentation of the Saddle Mountains anticline. Interpretation of late Quaternary deformation in the Saddle Mountains is significant because of the proximity to nuclear facilities on the Hanford Reservation and major dams on the Columbia River. Moreover, the fact that late Quaternary faulting has been identified on at least four Yakima fold belt structures, Toppenish Ridge, Ahtanum Ridge-Rattlesnake Hills, and the Saddle Mountains, raises significant questions about the seismotectonic evolution of the fold belt in general and potential hazard related to other folds and faults in the region.

Words from the Chair

Ah, springtime. When a young persons fancy turns to ... field trips!

As I write this, we are just six days away from our first field trip of the year. As someone whose entire job responsibility consists of sitting in front of a computer all day, every day, I look forward to every opportunity to get into the field, even when the topic is outside of my normal area of expertise. The topic of this field trip involves a theme common to all of us: the intersection of the nature and hazards of the real world colliding with the desires of the public, developers, planners, and regulators.

Our previously announced second trip, a tour of hot springs in central Colorado, will have to be rescheduled. Check your email for further announcements. Don't forget the Section picnic on May 20th.

The Board of Directors mid-year meeting is the first weekend in June. If you have a questions or concerns you wish to bring up with the Board, please contact me.

On a sad note, Doug Boyer has announced he is moving to Portland OR. Doug has been one of our most active members and we will miss him dearly. On behalf of the entire Section, I would like to wish him well and to extend our deepest gratitude for his many years of service to the Section. Our loss is Portland's gain.

Upcoming Events

Field Trips:

Debris Flows, Landslides and Potentially Unstable Slopes in Colorado Springs

Date: Saturday, April 29th

Time: 8:00 AM

Field Trip Leaders:

- Jonathan White - Colorado Geological Survey
- Thomas Terry - CTL/Thompson, Inc.

Meeting location: RTD park-n-ride parking lot at the southwest side of C-470 and University Blvd. (8392 S. Burnley Ct.) in Highlands Ranch.

Colorado Springs is a plains city with mountain problems, especially on the flank of Cheyenne Mountain. The first stop of the day will be the recently constructed debris-flow detention structures on the flank of Cheyenne Mountain. We'll stop for lunch at a local eatery, but those who want to bring their own lunch are free to do so. The afternoon will consist of visiting various landslides and/or potentially unstable slopes in an urban setting, debris flow hazard areas, and/or the large landslide deposit at the NORAD facility.

A maximum of 5 cars will be permitted on this field trip – this means there is a field trip cap of 25 people. The caravan will leave promptly at 8:00AM from the RTD park-n-ride parking lot at the southwest side of C-470 and University Blvd. (8392 S. Burnley Ct.) in Highlands Ranch. We plan to return to the park-n-ride at Highlands Ranch by 6:00 pm.

A large cooler with ice will be provided by the field trip leaders, but it's up to the attendees to fill the cooler – it's strictly BYO.

Please contact Eileen Dornfest if you have any questions. Eileen can be reached at eileen.dornfest@mfgenv.com or 970/223-9600.

TBA – Hot Springs in central Colorado. This trip will be led by Judy Hamilton. The logistics

have not yet been decided, so stay tuned and more information will follow as the date gets closer.

September 15th – 17th – Formal trip to Durango. Pending. More information will follow as it becomes available.

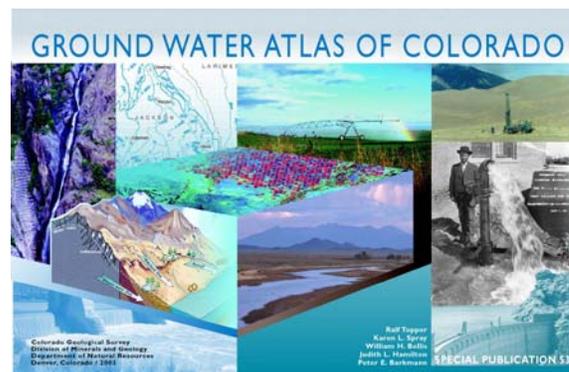
AEG-RMS Family Picnic:

We will be having a family picnic on Saturday May 20th at Lyons Park in Golden. Plan to attend and bring the family for an afternoon of fun in the sun! Stay tuned for more information.

Upcoming 2006-2007 Presentations

TBD - Jerry Higgins, Jahns Lecture.

Colorado Geological Survey Web Site for the Ground Water Atlas of Colorado – New Web Site Offers Synopsis of Ground Water in Colorado



Since its publication by the Colorado Geological Survey, the *Ground Water Atlas of Colorado* has received tremendous recognition and acclaim by professional organizations, water managers, educators, politicians, and the public. Most recently, the authors Ralf Topper, Karen L. Spray, William H. Bellis, Judith L. Hamilton, and Peter E. Barkmann received the Geological Society of America's 2005 E. B. Burwell, Jr. Award from its Engineering Geology Division, recognizing this distinguished contribution to the sciences.

The Colorado Geological Survey has now developed a web site that features a synopsis of the *Ground Water Atlas*. Like the original publication, the web site contains introductory chapters on the state's ground-water resource, as well as specific discussions on each of the state's major aquifers. The web site version consists of 3-4 pages of text and graphic materials for each of the original 7 chapters of the publication. In addition, the web site contains the complete glossary, and download capability of high-resolution graphic files displayed as figures on the web pages. The synopsis of the *Ground Water Atlas of Colorado* can be viewed at <http://geosurvey.state.co.us/wateratlas/>.

May 15-19, 2006 27th Annual Short Course on Grouting Fundamentals & Current Practice

Colorado School of Mines

Detailed Course Information:

www.mines.edu/outreach/cont_ed/

Technical Inquiries: Scott Kieffer (303) 273-3714 skieffer@mines.edu

The Colorado School of Mines will host the 27th annual short course on *Grouting Fundamentals and Current Practice*. This course covers injection grouting as a method to improve soil settlement characteristics and strength properties, and to decrease permeability of soil and rock masses. Geological site investigations, equipment and procedures for cement grouting, structural chemical grouting of soil, grouting rock under dams, chemical grouting for water control, grouting of rock anchors, compaction grouting, lifting and leveling, slab jacking, soil nailing, and grouting for underground structures are major topics covered. Principles and case histories are presented, and there is a field demonstration of compaction and permeation grouting, flow of ultrafine cement grout in sand cylinders, grout mixing, rock drilling and packers, and testing grout mobility.

The course content is directed toward Owners, Engineers and Contractors that have interest in the

capabilities of grouting to solve a broad array of geotechnical and structural problems. Course presentations are made by recognized authorities in the field of grouting. For attendance of the entire course, 3.5 Continuing Education Units will be awarded.

Conferences and Symposium, Call for Abstracts on the Website

Information, dates, and website links for the following conferences/symposiums can be found on our website at www.aegrms.org. Also look to the calendar of events on the website for an organized listing and dates of the many upcoming events.

- **First North American Landslide Conference**
- **40th Annual Symposium on Engineering Geology & Geotechnical Engineering**
- **57th Highway Geology Symposium Breckenridge, CO**
- ***GEO-volution: The Evolution of Colorado's Geological and Geotechnical Engineering Practice***

57th Highway Geology Symposium Breckenridge, CO

The Colorado Department of Transportation and the Colorado Geological Survey are hosting the 57th Annual Highway Geology Symposium (HGS) scheduled for September 26-29, 2006. Co-Sponsors include the Colorado Association of Geotechnical Engineers (CAGE) and the Association of Environmental & Engineering Geologists (AEG) and the local chapter of the ASCE. The conference will be held at the Beaver Run Resort, in Breckenridge, Colorado.

HGS registration is available on-line, and we encourage everyone to take advantage of this convenience. To register via the secure online server, go to

www.highwaygeologysymposium.org and click on On-line Registration.

Full Registration -- \$250.00

Students -- \$125.00

Late Registration (after August 1st) -- \$300.00

Full Registration Includes

- Tuesday Welcome Reception
- Wednesday Technical Sessions (Lunch provided)
- Thursday Field Trip with Lunch
- Thursday Evening Banquet
- Friday Technical Sessions
- Symposium Proceedings on CD

2006 Roy J. Shlemon Specialty Conference

The 2006 Roy J. Shlemon Specialty Conference is being held May 3-5, 2006 in Durango, Colorado at the Historic Strater Hotel. The conference subject is "Mass Wasting in Disturbed Watersheds" chaired by Bill Haneberg, Sue Cannon, Paul Santi, and Jeff Coe.

To receive more information and to register for the conference, go to the web site:

www.haneberg.com/watersheds or go to AEG's web site (www.aegweb.org) and click on the Mass Wasting logo.

The objective of the conference is to bring together practitioners and researchers in order to define the current state of practice and identify unresolved problems with regard to the prediction and mitigation of mass wasting in disturbed watersheds.

Be sure to submit your abstracts to Julie Keaton at aegjuliek@aol.com

To make hotel reservations, call the Strater Hotel at 970-247-4431 and let them know that you are a participant in the "AEG Shlemon Specialty Conference" and receive your group rate.

If you have any questions, do not hesitate to contact Bill Haneberg at bill@haneberg.com.

Invited guest speakers include:

1. Tom Koler of the U.S. Forest Service speaking about "Progress in forest engineering geology in the late 20th century and early 21st century -- the integration of engineering geology within ecosystem management of forested lands."
2. Laura Vaugeois of the Washington Department of Natural Resources speaking about "Washington's landslide hazard zonation project: a process for addressing risk to resources."
3. Charlie Luce of the U.S. Forest Service speaking about "Mass wasting following forest fires: processes at multiple scales."
4. Sue Cannon of the U.S. Geological Survey speaking about "Tools for assessing post-wildfire debris flow probabilities and magnitudes."
5. Jon Major of the U.S. Geological Survey speaking about "Mass wasting in volcanically disturbed watersheds: primary events, landscape responses, and geologically-ecological interactions."
6. Bill Laprade of Shannon & Wilson speaking about "Effects of urbanization on mass wasting -- detrimental and beneficial."
7. Bill Haneberg of Haneberg Geoscience speaking about "Landslides, lasers, and logarithms: the role of emerging technologies in watershed-scale slope stability assessment."
8. Rod Silde of Kyoto University (title to be announced)

Searching for Past AGI Minority Participation Program Scholars

The American Geological Institute is searching for past scholarship recipients from the AGI Minority Participation Program (MPP) to complete a short survey. The AGI MPP program is the longest running minority program in the geosciences, dating back to 1972. More than 950 MPP scholars

have received millions of dollars of scholarships over the past 34 years. Many of our past scholars are currently working as leaders in the geoscience community, and many have gone on to exciting careers in other fields.

We would like to evaluate the AGI MPP Program, in order to improve it for current and future students. The survey will only take 10 minutes, and will be used to track the successes of the program over the past 34 years! If you were an MPP scholar, please take the time to participate!

Please forward this Web address to your membership, newsletters, and listservs to help us find everyone! AGI will publicize the results of this survey once it is completed. Thanks for your help!

Link to the AGI Minority Participation Program survey here: <http://www.agiweb.org/mpp/>

If you have any questions on this survey or the Minority Participation Program please contact:

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Technical Articles Needed for AEG NEWS

We are always on the alert for short technical articles for the AEG NEWS. Length about 850 words on nearly any subject of interest to the AEG members: Landslides, contaminant plumes, groundwater investigations, dams, etc. In fact we need a technical article for the March issue. Photos are welcome as long as they are reproducible at the scale needed. Ask our section members. Send your submittal to Allen Shaw and to Andi Ptak. Addresses inside the front cover of the NEWS.

Case Histories/Member Contributions

We are always looking for individuals to provide their knowledge and experience to the AEG-RMS community through case histories and articles of interest. Please contact Kristi Ainslie at newsletter@aegrms.org if you have anything you would like to share. We have had good success with this in the past, so keep it going.

AEG 2006 Annual Meeting

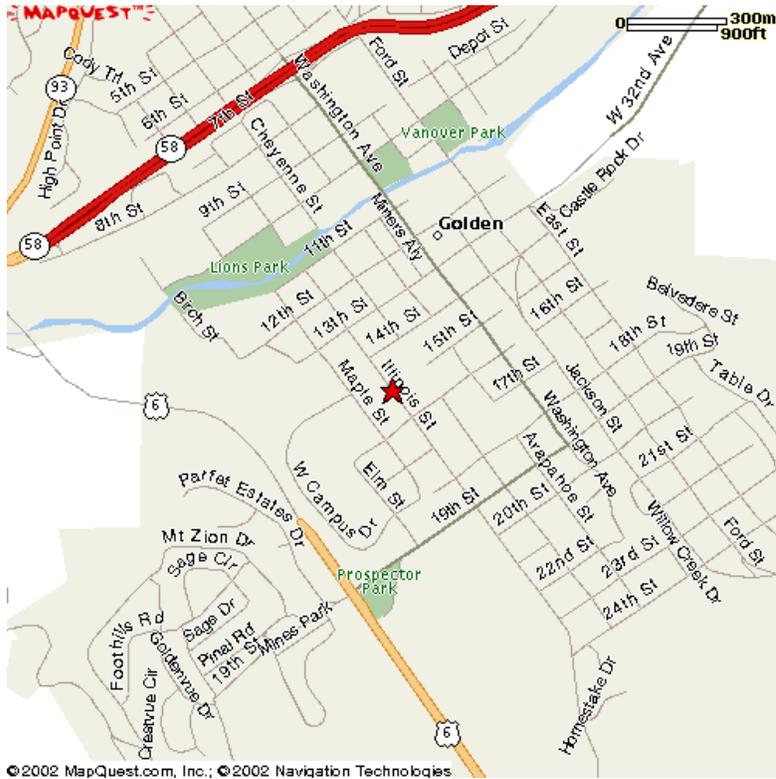
MARK YOUR CALENDARS: AEG-2006 "Northeast Engineering Geology: From Till to Fill" in Boston, Massachusetts; October 30 through November 4 at the Boston Park Plaza Hotel. **Abstracts are due May 1!** Special events include: 2 symposia (Big Dig in Boston; and New England State Geologists' Panel -- with the State Geologists from MA, VT, ME, NH, RI, and CT); 4 field trips (The Concord-Lexington Battle of April 19, 1775: A Clash of Continents and Cultures; Geology of Boston Harbor; Influence of Geology on Engineering Design in Boston; and Engineering Geology of the Combined Sewer Overflow Project, Providence, RI); and a Special Event -- Cape Cod Clambake including a tour of Wood's Hole Oceanographic Institute. For more information, contact Dick Sherman (General Chair) at Dick.Sherman@m-e.aecom.com.

Parting Words

This will be the last newsletter before the summer. If you have any information that you would like to distribute to the Rocky Mountain Section, feel free to let us know and we'll get it out there.

An item of interest from Harry Siebert – he has achieved "Legion of Honor Fifty-Year Membership" in the Society of Mining Engineers. Congratulations Harry!

Have a great summer! We'll be back in touch in September.



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COLORADO SCHOOL OF MINES – BERTHOUD HALL

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