

SPRING 2012

GEONews

Newsletter of the Association of Environmental
& Engineering Geologists, Carolinas Section

2009 and 2011 AEG Section of the Year

SAVE THE DATE!
THURSDAY,
MARCH 29, 2012
AEG Carolinas
Spring Meeting
With Jahns Lecturer
Dr. Scott Burns

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Cover: Dr. Scott Burns, Richard Jahns Distinguished Lecturer for 2012. See page 4 for description of his talk on Terroir.

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GeoNews is a publication of the Carolinas Section of AEG. There are four issues per year, with deadlines and issue publication dates listed below. We publish news of the profession, technical articles, and job openings.

Deadlines for submittal to AEG Carolinas GeoNews

(can be flexible depending on events)

Spring – deadline March 1, issue date March 21
 Summer – deadline June 1, issue date June 21
 Fall – deadline September 1, issue date Sept. 21
 Winter – deadline December 1, issue date December 21

Deadlines for submittal for the National AEG News:

March issue – January 15
 June issue – April 15
 September issue – July 15
 December issue – October 15

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Quarterly Quiz:

What river in what western state is named for the topographer who accompanied General Sherman in 1844-1845? Read this quarter's newsletter to find the answer!

The first person to contact the editor with the correct answer will be awarded a mention in the next issue of GeoNews. The correct answer will be in next quarter's newsletter. Contributors to this newsletter are not eligible.

MESSAGE FROM THE CHAIR

By Paul Weaver, PG,
Chair—AEG Carolinas Section

Our winter meeting was held in Concord at Dave & Buster's on January 26. Our speaker was John Hodge, an attorney and a professional geologist, who informed us regarding some of the legal issues facing our profession today. About 80 people attended this meeting.

This year's GSA/AEG Jahn's Distinguished Lecturer is Scott Burns. Scott will have a full week in the Carolinas the end of March giving talks to universities across North Carolina and South Carolina. As part of his tour, Scott will talk at a combined meeting of AEG and SCAEP in Columbia, S.C. on March 27, and at our spring section meeting in Raleigh on March 29. I hope all of you will have a chance to hear Scott talk at one of these meetings. He is a thoroughly entertaining speaker.

The Geological Society of America (GSA) will be holding their Southeast meeting in Asheville on March 31 through April 2. The Carolinas Section will have the AEG booth set up in the exhibit hall, we will be a sponsor for the keynote address, and we will be convening a technical session entitled "Practical Applications of Engineering Geology". We will also be a sponsor of the GSA national meeting in Charlotte in November where we will convene a technical session entitled "Practical Applications and Environmental and Engineering Geology". If you have a presentation on this subject that you can present at the GSA meeting in November, please contact me (contact information is at the bottom of this article) and let me know since I need to start putting together the symposium as soon as possible.

I would like to encourage all of you to attend the AEG national meeting in Salt Lake City on September 15-23. It is a great way to network with other geoscience professionals, to participate in informative field trips, and to listen to 3 days of informative technical presentations. You can get more information on the meeting by going to the AEG website (aegweb.org) and clicking on the annual meeting icon.

The grand opening of the Nature Research Center at the North Carolina Museum of Natural Sciences will take

place on Friday, April 20 and Saturday, April 21. The AEG Carolinas Section will have our booth set up on Friday, April 20 from 5:00 PM until 10:00 PM. We will have an interactive exhibit entitled "What on Earth Is It?" where the idea is to have rocks, minerals, fossils, etc. that the guests can try and guess what they are. We are still in the planning stages for our exhibit, and I have requested that the UNC-CH and NCSU Student Chapters assist me with formulating how exactly we will do our exhibit. I will take whatever ideas I can get, and I need volunteers to man the booth. Please contact me if you can help out in any way.

A few other things that the Carolinas Section is hoping to put together for the coming year include a geophysics short course and a Shale Gas Conference in the fall. We are also hoping to have a section pig-pickin' sometime this summer as a purely social event, and we may have a camping trip/field trip somewhere in the western part of the state. In addition, we plan on continuing to have monthly brew pub socials at various locations throughout the state. Please stay tuned with your GeoNews, AEG News, and email alerts for more information on these and other opportunities to expand your knowledge and to network with your colleagues.

There have been some interesting developments on the political front lately in regards to our profession. Most of you have probably heard by now that South Carolina is considering eliminating the licensing of geologists in that state. It seems that some of the politicians don't think that we do anything important and that, therefore, there is no need to require that geologists have any particular training or skills to be able to practice geology. I have sent a letter to Governor Haley with copies sent to all of the senators on the Labor Committee that will be required to vote to send the bill forward. A copy of my letter is on page 20 of this newsletter. Virginia is currently going forward with consolidating the geologists licensing board into several other boards. The Carolinas Section has individuals who keep track of bills concerning the practice of geology that arise in North Carolina and South Carolina. Even though Kentucky and Tennessee are not part of our section, we have several geologists who are members of our section who also practice in those states, and we need

(Continued on page 6)



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TERROIR—THE RELATIONSHIP OF GEOLOGY, SOILS AND CLIMATE TO WINE ON MARCH 29

Scott Burns, geologist, university professor, author, and the 2011-2012 Richard H. Jahns Distinguished Lecturer for AEG, will be in the Carolinas on March 29, 2012 to present his talk *"The Mystery of Terroir—The Relationship of Geology, Soils and Climate to Wine."* Scott is a dynamic and interesting speaker—make sure you get your reservations in early!

The talk will be held at Sparian's Bowling Boutique and Bistro, North Hills, Raleigh. We have had meetings there before—a great venue. Directions and details are in the blue box on the next page.

Abstract: *The Mystery of Terroir – the Relationship of Geology, Soils, and Climate to Wine*

Wines differ from each other based on seven different factors: the type of grape; the bedrock geology and resulting soils; the climate; the soil hydrology; the physiography of the site; the winemaker; and the vineyard management techniques. The first five of these factors make up what the French call *terroir*, "the taste of the place". Bedrocks weather into soils which then liberate chemical nutrients to the grape vines. Twelve of the 16 essential elements for wine grapes come from the soil. All around the world the geology and soils make up an important component of the *terroir* of the wine. Using examples from the Willamette Valley of Oregon, Scott will discuss the *terroir* of the region because it is strongly influenced by the bedrock geology and soils. The two dominant groups are the volcanic soils, the Jory Series, which developed on the Columbia River Basalts, and the Willakenzie Series of soils, developed on uplifted marine sedimentary rocks in the foothills of the Oregon Coast Range. The wines made from the grapes of these two soils are very different.

Bio: The 2011-2012 Jahns Lecturer, Dr. Scott Burns, is a professor of geology at Portland State University (PSU), where he specializes in environmental and engineering

geology, soils, geomorphology, Quaternary geology and *terroir*. He is in his 22nd year of teaching there and has over 40 years of experience teaching at the university level, with previous positions in Switzerland, New Zealand, Washington, Colorado and Louisiana. An author or co-author of two books, over 80 articles, and over 200 published abstracts, Scott has worked on research topics as diverse as landslide, debris flow, radon and earthquake-hazard mapping, heavy metals and trace elements in soils, loess stratigraphy, slope stability, Glacial Lake Missoula Floods, bio-geomorphology (pocket gophers, tree throw, and ants), alpine soil development, and *terroir* (i.e., relationship of geology, soils, climate and wine).

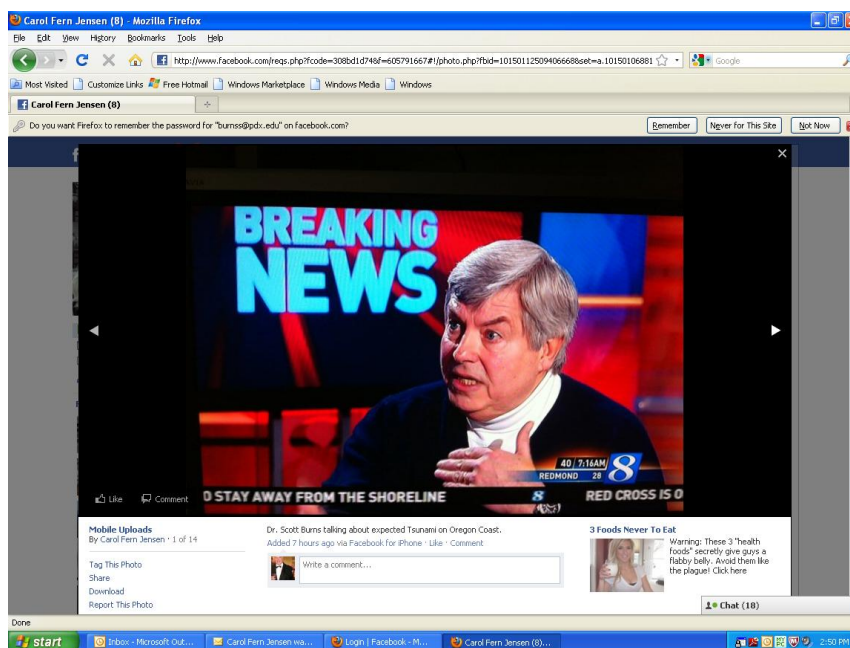
Scott received his B.S. and M.S. degrees from Stanford University and his Ph.D. from the University of Colorado. He holds registrations in Oregon (RG and CEG) and a license in Washington (LG). Scott also is a consultant and an expert witness for law cases. Scott was president of AEG in 2002-2003 and vice president (North America) for IAEG in 2006-2010. He has been the Chair of the EGD and the Treasurer of the Quaternary Geology and Geomorphology Division of GSA for 12 years. Scott has

been an Associate Dean, chair of departments and president of faculty senates at three different universities, and president of one of the largest and oldest Rotary clubs in the world. Scott has won many awards for outstanding teaching. He actively helps local TV and radio stations and newspapers bring important geological news to the public.

About the Richard H. Jahns Lectureship:

The Jahns lectureship was established in 1988 and is sponsored by AEG and GSA's Engineering Geology Division. Its purpose is to provide funding for distinguished engineering geologists to present lectures at colleges and universities in order to increase awareness of students about careers in engineering geology. The lectureship is named in honor of Dr. Richard H. Jahns (1915-1983), an engineering geologist who had a diverse and distinguished career in academia, consulting and government. The Carolinas Section has hosted the Jahns Lecturer for the past five years.

(Ed: See article about Scott's talks to eight Carolinas Universities in five days on page 15. BTW, it's pronounced TehWah, according to Wikipedia.)



DIRECTIONS:

Sparian's is located on the eastern side of Six Forks Road, opposite North Hills Mall, at the intersection of the Raleigh Beltline (I-440) and Six Forks Road in north Raleigh.

Take the Beltline to the Six Forks Road exit (no. 8) and head north on Six Forks Road.

Take the first right into the shopping center or the second right onto Dartmouth Road, and then an immediate right into the parking lot.

There are surface parking lots on your left and right if you come in from Dartmouth.

Sparian's is near the northern end of the large building and faces west.

MEETING DETAILS

Place: Sparian's Bowling Boutique and Bistro, 141 Park at North Hills Street, Raleigh, NC

Date: Thursday, March 29, 2012

Time: 6:00 PM social hour, 7:00 dinner, 8:00 speaker

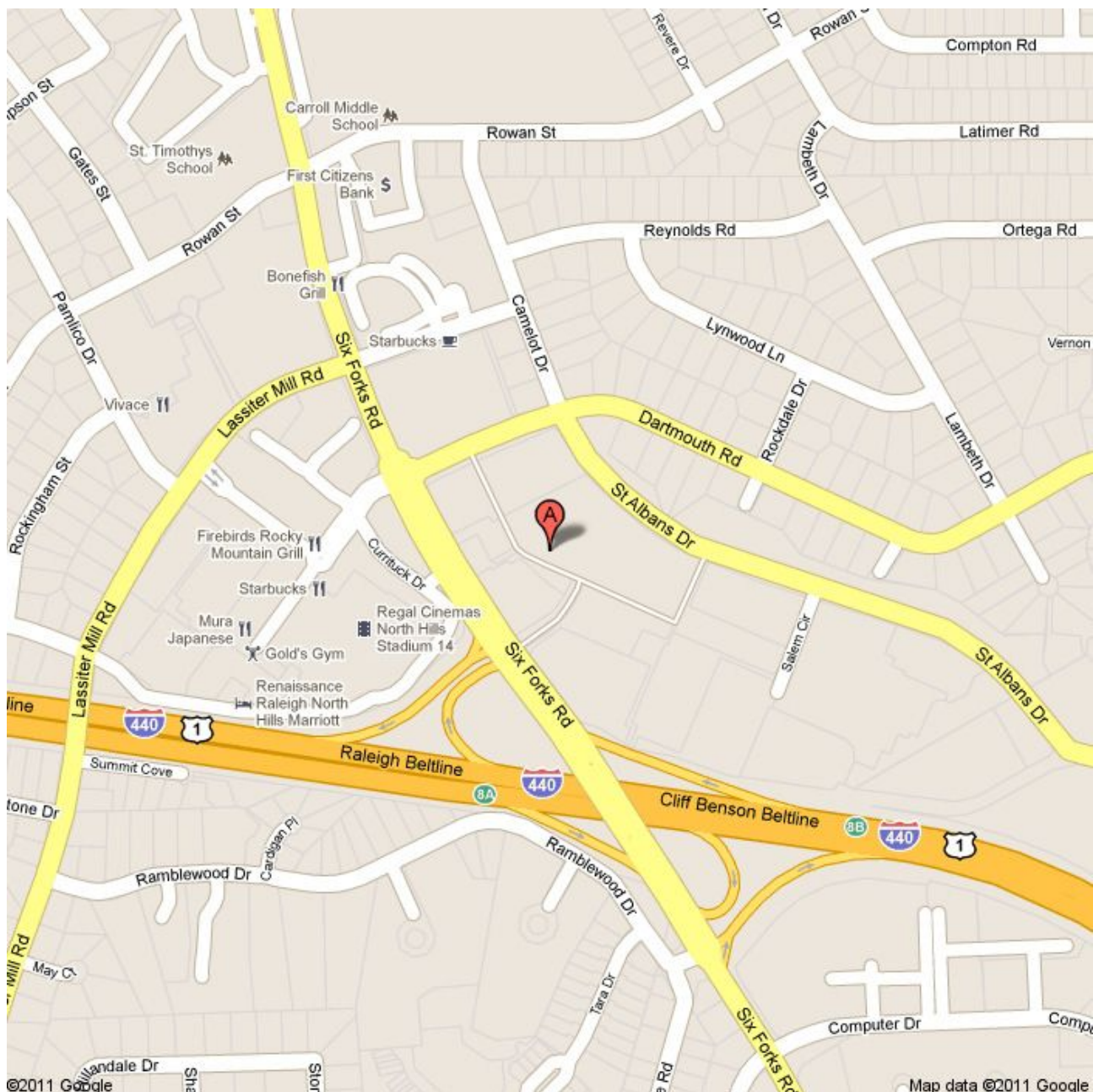
Program: *"The Mystery of Terroir, the Relationship of Geology, Soils and Climate to Wine"*

Cost: AEG Members \$25, non-members \$30, public school teachers \$10, students FREE with college ID.

Reservations: Please make reservations with Rick Kolb by 6:00 pm on Monday, March 26, 2012.

Phone: Rick Kolb, (919)858-9898

Email: rakolb0915@aol.com



AEG CAROLINAS SECTION 3Q TREASURER'S REPORT

By Alex Rutledge, Section Treasurer

BALANCE as of June 30, 2011

Checking Account	\$3,115.13
Money Market Account	\$21,657.84
	<u>\$24,772.97</u>

INCOME

Social Events	\$88.00
Sponsorships	\$250.00
Earth Science Kit Donations	\$750.00
Interest	
Money Market	\$2.60
SUBTOTAL - INCOME	\$1,090.60

EXPENSES

Dinner Meetings	
Asheville - Pack's Tavern Deposit	\$500.00
Meeting Cake	\$0.00
Social Events	
Durham Bulls Game	\$160.00
Educational Programs	
Earth Science Kits	\$2,958.00
Section Chair Flight to AEG Meeting	\$868.00
SUBTOTAL - EXPENSES	\$4,486.00

BALANCE TRANSFERS

Money Market Account to Checking Account	\$4,000.00
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BALANCE as of September 30, 2011

Checking Account	\$3,716.93
Money Market Account	\$17,660.44
TOTAL	<u>\$21,377.37</u>

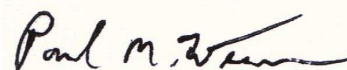
(Message from the Chair—Continued from page 3)

someone to keep an eye out for bills pertaining to geology that may be put forward there. If you would be willing to volunteer to monitor either Kentucky or Tennessee, or both, please let me know.

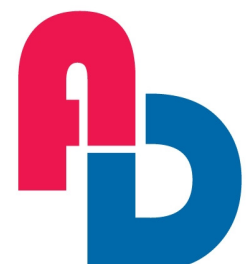
AEG cannot exist without the participation of its members. I urge all of you to be as active in the association as you can possibly be in order to keep us strong. I also urge you to renew your AEG membership if you have not already done so, and to talk to your colleagues who are not AEG members and encourage them to join.

Thank you all for your membership and support of the Carolinas Section. As always, please feel free to contact me at the email address listed below with any ideas, concerns, comments, etc. that you have for AEG and the Carolinas Section in particular.

Sincerely,



Paul M. Weaver, P.G.
AEG Carolinas Section Chair
pmweaver@bellsouth.net



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AEG CAROLINAS SECTION QUARTERLY BOARD MEETING CONFERENCE CALL

February 16, 2012. The Spring Board meeting was called to order at 3:30 PM.

Attendees:

Paul Weaver (Chair)
Rick Kolb (Past Chair)
Alex Rutledge (Treasurer)
Adam Phillips (Social Committee Chair)
Fred Love (Membership Chair)
Jane Gill-Shaler (Sponsorship)
Jennifer Bauer (Advisor)

Carolinas Section Treasurer's Report – Alex

- Alex reports that \$2K in checking, sponsorships have come in (about \$2100), have total over \$20K in account as now
- Comments: Jane needs copy by middle of March to put in next newsletter

Scott Burn's Jahn's Lecture Tour - Rick

- Please give us a quick overview of the schedule
- Is there anything not set that you need help with?

- Comments: Rick reports that everything is covered. Schedule is available to anyone who wants a copy. (ED: See Burns' schedule on page xx)

Section meeting on March 27 in Columbia

- Joint meeting with SCAEP
- Total cost to us is \$150
- Comments: Jenn might attend, probably Raymond Knox, Fred Love

Section meeting in on March 29 at Sparian's - Rick

- Announcement already sent?
- When do we need to resend?
- Do you need help with receipt printing or anything?
- Who's laptop can we use to display slide shows before meeting
- What slide show besides the annual meeting do we want to show?
- Comments: Same location, format, and menu as last year. We told Sparian's to plan tentatively on 70 or 80. We expect announcement to go out today or Monday. Paul will put PowerPoint for Annual Meeting to show at meeting

(Continued on page 8)



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(Spring AEG Carolinas Minutes, Continued from page 7)

Section field trip

- Brad has agreed to take over the chairmanship of the field trip committee
- What do we have in regards to ideas for field trips?
- Comments: Camping trip is still a good possibility
- Possibility of field trip to NCGS project
-

GSA Asheville regional meeting


- March 31 (Saturday) through April 2 (Monday)
- The Carolinas Section is putting on a symposium entitled "Practical Applications of Engineering Geology"
- Brad and Paul are the conveners
- We will have AEG booth at the meeting (cost \$150) and will have people to man the booth (any volunteers?)
- We are sponsoring the keynote address for \$500
- Comments: AEG attendees- Paul Weaver, Brad Worley, Jenn Bauer, Rick Wooten, Jane Gill-Shaler (possibly), Briget Doyle (possibly)

North Carolina Science Festival

- Will be held Friday, April 20
- We will have AEG booth and will have interactive display of "what on earth is it" where we bring rocks and fossils and have visitors guess what it is
- Will be held at, and as part of the grand opening of, the Museum of Natural Sciences
- Booth will be open from 5:00 to 10:00, but we need to be there 4:30 to 10:30
- Paul needs volunteers for supplying rocks and fossils, setting up booth, manning booth, and tearing down booth
- Paul needs input in regards to structuring the interactive part of the display
- Comments: Paul to send out email to selected members to try and get a committee together to put this on.

GSA National meeting in Charlotte on November 4-12, 2012 (Sunday through Wednesday)

- We will put on a symposium on "Practical Applications of Environmental and Engineering Geology"
- What level, if any, of financial sponsorship would we like to offer for this meeting?



ROBERT "BUTCH" STEVENS
VICE PRESIDENT

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- Comments:
 - AEG booth should be used
 - We should do a \$500 sponsorship; will get approval from full board first.
 - Board Votes for \$500 sponsorship: Paul Weaver-Yes, Rick Kolb-Yes, Brad Worley-Yes, Alex Rutledge-Yes, Briget Doyle-Yes

AEG Annual Meeting

- What do we want to sponsor? (see list of available sponsorships and levels)
- Do we want to sponsor at the \$500 level as we have in the past?
- Comments:
 - The members on the call are in favor of \$1K exclusive sponsorship for Ice Breaker. Will get vote from full Board.
 - Board votes for \$1K sponsorship for Ice Breaker: Paul Weaver-Yes, Rick Kolb-Yes, Brad Worley-Yes, Alex Rutledge-Yes, Briget Doyle-Yes

Annual membership renewals

- Fred sent out first round of emails, then we found out the list sent to us from National was not accurate
- Should we wait until the first of March to start further contacts so we can make sure the list has been cor-

(Continued on page 9)



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(Spring AEG Carolinas Minutes, Continued from page 8)

rected by National?

- Comments: Send email from new list the first of March. All Board members should call the people on the list that they know personally to find out why they haven't renewed; we will need to make a list so we aren't calling the same people multiple time.

Scholarships from Carolinas Section

- Board voted to grant \$500 for a student to attend the annual meeting, \$500 for a student to attend school, and \$500 for a student to attend field camp.
- Paul can't get any reply from the Foundation for setting this up, so it won't happen this year
- Comments: We will talk to Scott when he comes to visit the Section since he's on the Board.

Carolinas Section Social Committee - Adam; anything to report?

- Comments: AEG BBQ meeting on a weekend, maybe a pig-pickin', summer time
- Paul will check on a location to have this in Greensboro where we can have a keg.

South Carolina legislature move to abolish licensing for geologists (ED: See letter on page 24)

- Paul has written a letter to the Governor and the members of the labor committee; he will be glad to send a copy of the letter to whoever wants to read it
- Our plan is to keep up a steady stream of information to the committee because we don't know when any vote will be
- Raymond is trying to set up contacts with media
- Comments: Need to keep up the pressure in South Carolina
- Need Raymond Knox to tell us how timing of counter-attack needs to be
- Jenn Bauer to write letter for AEG also

Redox conference

- Dave, can you give us an update on this?
- Comments: Everything's in place

Geophysical One-Day Short Course

- We are working with Matt Howe of the Southeastern Section to try and set up a one-day short course on geophysics similar to the course that was offered at

the Charleston annual meeting

- The idea is to have a day in Atlanta and another in either Raleigh or Charlotte
- A survey was sent out to the membership of both sections and results tallied
- We are looking at holding off until possibly this fall to hold this course
- Comments: Raleigh, Charlotte, and Atlanta
- Friday is first choice, Tuesday is second choice, Saturday was a top choice also
- Still working on costs

Shale Gas Symposium - Rick

- Anything new to report on this?
- Comments: Brian Smith of AMEC is leading the effort. Outline has been worked on
- Have some ideas for speaker list
- AEG and American Groundwater Trust will be sharing the organization of this symposium
- Will be a 2-day symposium with invited speakers, and will have it sometime in the fall after the DENR study has been completed
- Shooting for attendance of around 200

Update on sponsor renewals

- Jane, what is our current status on renewals?
- Comments: Platinum pluses have renewed
- On-track with where we usually are this time of year

Posting resumes and jobs on our website

- Tami, do you know if we have the ability to do this now?
- If not, what do we need to do to get this ability?
- Should Paul take this up directly with Brad Isles to work out how to do it?
- Comments: Paul will discuss this with Tami (maybe put under "appointment" tab?)
- One page for employment opportunities and a page for resumes (will need someone, preferable a Board member, to review submittal before anything is posted)

Other Issues

- Jenn – Legislative drive-in to go to Raleigh and talk to representatives. Will be April 26. Organized by ASCE. Ask ASCE about it at joint meeting at Sparian's in March.



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GEORAMBLINGS

By Dr. Charles W. Welby
March 19, 2012

In late February I wandered to places familiar and less familiar. All had some interesting geologic features, and some represented places I had been before and others were places where papers at AEG meetings and other meetings as well as family history suggested it might be interesting to visit.

The first place I went was to the southwest corner of the San Joaquin Valley in California to obtain a transfusion of sulfur rich 12 API gravity crude oil. Steam flooding is required to extract it, and it is younger than the older lighter oils in the same general region. From there I wandered eastward to the upper reaches of the Kern River to become acquainted, as best one can on a narrow winding road, with the Lake Isabella Dam and its historical and geologic setting. The Kern River, once the longest river system draining the Sierra Nevada Mountains becomes essentially dry soon after it leaves the Sierran mountain front east of Bakersfield. Because of appropriative use of the water the Kern no longer flows through Bakersfield and eventually to its historical, both geologic and human history, end at Buena Vista Lake whose area is now occupied by a variety of agricultural uses. The geologic history of this part of California lies in the San Joaquin Basin and in the sediments brought from the rising Sierran block to be deposited in the seas occupying what is conveniently called the San Joaquin Basin. Much of the petroleum production of the east side of the southern San Joaquin Valley comes from the sediments shed by the Kern River and associated streams into the Miocene sea.

Lake Isabella is one of the artificial lakes formed where a dam was placed across the Kern River. The lake is a reservoir for water supplies for the area around Bakersfield. The concern about the dams blocking the Kern River is related to the Kern River Fault which the river follows in places. In other places it parallels the river a short distance away. The main dam for Lake Isabella lies across the Kern River where the North and South Forks of the Kern meet. The Kern River fault thus could have considerable impact on the dam and consequently the population downstream. (Incidentally, the name for the river comes from the name of the topographer for the 1844-1845 visit of General Sherman and his exploration party to the area.)

Today because of the dams upstream and extraction of the water before it can get to the Bakersfield area in the stream bed, the Kern River's wide stream bed of yore is now mostly dry with an occasional thread of water running through it at the wetter times of the year. None reaches the historical terminus of Buena Vista Lake, treasured in the past by the Native Americans for its fish and other game and by the local people up to about a half of a century ago for the fishing opportunities. The "Old

Swimming Holes" in the Kern no longer exist, and the Lake Buena Vista of today is provided with its water from the California Aqueduct that passes around the edge of the Buena Vista flats.

Today Lake Isabella shows the "bathtub ring" found also in the lakes on the Colorado River, especially Lake Meade. The "ring" emphasizes the lowered precipitation in much of the west, and the dryer climate that currently persists in much of the Southwest U.S. as well as the greater demand for water from the systems.

The concern about the safety of the dam at Lake Isabella was discussed in a paper or two at the AEG meeting at Lake Tahoe in 2009 with discussions of the faults that encounter it and are nearby. In checking through the Internet, I found a headline in the Bakersfield Californian of a recent time the expression of concern about the dam at Lake Isabella because of the presence of known faults.

West of the dam at Isabella the Kern flows in a narrow winding channel. This stretch of the river is a favorite site for rafting downstream, and the National Park Service has posted sites where rafts may be put into the water. In addition there are abundant signs about wearing life jackets if going on the river. A sign near the entrance to the Kern River Canyon where the river debouches out into the valley, cutting through terraces along the front of the mountain chain, gives a count of over 250 people who have lost their lives since 1968 while rafting on the Kern above the point of the sign.

One interesting "windshield geology note" is the observation that the granitic rocks of the Sierras which are exposed in the road cuts to Lake Isabella contain modest sized inclusions of dark, fine-grained metamorphic rocks from the deeper part of the crust. The dark metamorphics seem always to be more resistant to weathering than the coarser grained granitic rocks and appear as raised bumps on the weathered surface of the bedrock.

Oh, yes, there were "Ole Swimming Holes" in the Kern River near its final turn into Buena Vista Lake. I had an acquaintance of a somewhat younger age tell me of the time he and a friend while in their senior year in high school "ditched" a day in the last week of the school year and went swimming in one of the swimming areas in the Kern River. The beach happened to be observable from a

(Continued on page 11)

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GeoRamblings (Continued from page 10)

local highway, and the two were spotted swimming by the parents of one as they drove by the beach. When the two boys returned home, there was some “serious conversation” about proper behavior, attendance at school, driver’s licenses, and other such matters.

The second part of the trip had me driving across the San Andreas Fault trace (small bump in the road) at the southern end of the Carissa Plain and through the Cuyama Valley with its bordering landslides and wide terraces in places described in a USGS Geologic Map somewhere, and over Pine Mountain Summit with its major thrust fault, down into the Wheeler Hot Springs area, avoiding a conglomeration of motorcyclists, and eventually to U.S. 101 along the coast. Some years ago, near Wheeler Hot Springs, a forest fire was supposedly ignited from the heat generated by the weathering of pyrite in one of the formations of the area, perhaps the Cozy Dell Shale.

Sitting at Shoreline Park in Santa Barbara on a sunny day, one can admire the curvature of the earth and estimate how far out to sea one may observe the Pacific, (the Channel Islands, and the ships at sea). Twenty feet above the mean sea level on a quiet and clear day will let you view out about 6 miles. As one sits along Shoreline Park on a clear day one can see a line of 8 Spanish Galleons cruising through Santa Barbara Channel. Actually they are oil platforms used to extract the fuel that helps keep the economy running.

More close than the oil production platforms is the

edge of the bluff that marks the seaward edge of the Shoreline Park, delineated by a cyclone fence. As one walks behind the fence and looks over the bluff, the presence of active mass wasting is obvious. Less obvious, though, are the places where the tension meters are placed to help Santa Barbara monitor the threat of additional failures of the bluff as the sea attacks them from the west and water draining off the land adds to the lessening of the strength of the bluff materials. In one place, a landing and a set of steps dedicated to a local important personage have slipped seaward and are no longer useable.

But as one sits contemplating the dynamic world in front of one’s self, the beauty of the scenery, the interesting involvement of the human race in modifying the world about them, and in turn the control that the physical, chemical, and organic environment has upon one’s self, one can turn to trying to understand the causes of specific developments past and present and upon how the geologic events of the past and probably the future will effect our thinking and our way of greeting each new day.

Q.E.D.

Charles W. Welby

Dr. Charles W. Welby is a former Section Chair for AEG Carolinas and a regular contributor to this newsletter. He may be reached at cww_ral@hotmail.com.



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AEG•2012—55th ANNUAL MEETING—The Hilton Salt Lake City Center, September 17-22

The AEG Intermountain Section warmly invites you to join us in Salt Lake City, the heart of the Intermountain West, for the 55th annual meeting of the Association of Environmental & Engineering Geologist. Salt Lake City, located in a remarkably diverse and active geologic setting, is in the eastern-most Basin and Range physiographic province at the margin with the Rocky Mountain province; the deep canyons of the Colorado Plateau are just a stone throw to the south.

The Wasatch Fault, one of the world's longest Holocene-age normal faults, is situated at the base of the spectacular Wasatch Mountains, along the east side of Salt Lake City. The Salt Lake Valley is ringed by shorelines of Pleistocene Lake Bonneville (initially identified, studied, and named by G.K. Gilbert in the 1890s). The glaciated peaks, moraines, and valleys of the Wasatch Range are only 20 minutes from downtown Salt Lake City. The AEG Intermountain Section is excited to host the 55th annual AEG meeting and seeing one-and-all, please join us.

About Salt Lake City ...

Salt Lake City is a vibrant urban center with unparalleled access to alpine and desert outdoor recreation. Downtown Salt Lake City is home to dozens of great restaurants and bars, numerous world-class brew pubs, and two major shopping malls (including the beautiful City Creek Center, newly opened in March 2012). All of this is in a pedestrian-friendly setting that is served by a "Free Zone" light rail line.

The magnificent alpine recreation centers of Park City, Alta, and Snowbird are easily accessed by a 30-minute drive from downtown. Southern Utah's breathtaking national parks, including Arches, Canyonlands, Capitol Reef, Bryce Canyon, and Zion, are about 4½ hours away by car.

About The Hilton Salt Lake City Center ...

The Hilton Salt Lake City Center is in the nexus of downtown, within a few minutes' walk of the free-zone light rail line, restaurants, bars, shopping, and other attractions. The hotel is beautifully decorated, with luxurious rooms, two restaurants, a pool, fitness room, and a full-service spa.

Call for Technical Papers

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- Environmental and engineering geology of mining
- Water resources
- Landslide investigation and remediation
- Debris-flow hazards
- Remote sensing
- GIS technologies
- Engineering geology and dams
- Unconsolidated aquifers and earth fissures
- Rock mechanics
- Earthquake hazards
- Paleoseismology and fault investigations
- Applications of geophysics
- Geologic-hazards mapping
- Status of the profession (licensure, standards of practice, report review, ASBOG)

Proposed Symposia

- Earthquake Hazards in Utah/Basin and Range
- Great Basin faulting/fault-rupture hazard mitigation
- Central and Eastern U.S. Earthquake Hazards in the Year of the New Madrid Earthquakes' Bicentennial
- Capturing Uncertainty and Variability in Geology: Site Conditions and Natural Processes
- How Climate Change will Affect our Profession
- Dam Scour
- LiDAR Applications to Engineering Geology
- Ground Water Monitoring around Solid Waste Facilities
- Innovative Geotechnical Design Consideration for Solid Waste Facilities
- Slope Stability in Mining

Field Trips ...

Engineering Geology of the Kennecott (Rio Tinto) Open-Pit Mine: This field trip will investigate a variety of the engineering, environmental, and geologic aspects of the largest open-pit copper mine in the world. The Kennecott open-pit mine, in operation since the 1890's, produces about 3 million tons of copper, 5 million ounces of gold, 4 million ounces of silver, 30 million pounds of molybdenite, and 1 million tons of sulfuric acid each year. The mine is more than 2.75 miles wide and 0.75 miles deep. We will visit the historical museum at the rim of the open-pit, meet with mine engineers and geologists, enter the pit (lunch will take place in the bottom of the pit), learn about the geology of the ore deposit, history of mining activities, rock removal, ore control, slope stability, ground- and surface-water control, mine reclamation, mine sustainability, and blasting techniques (hopefully we will be present during detonation of a pit-blast).

Engineering Geology and Geologic Hazards of the Wasatch Front: The Wasatch Front in the Salt Lake City area is characterized by the Holocene-age Wasatch and West Valley fault zones, canyons with high debris flow potential, active urban landslides, and textbook examples of Quaternary geologic, geomorphic, and alpine glacial

(Continued on page 13)

(Letters from Randy—Continued from page 12)

features. On this trip we will visit fault scarps of the Wasatch fault zone developed in late Quaternary glacial moraines, lake sediments, and alluvial fans. We will also visit an active, creeping landslide that is slowly tearing apart a neighborhood, and the sites of other historic landslides (including the Thistle slide, which caused about \$400 million in damage in 1983).

Alpine Hydrogeology of the Park City area: Owing to the spectacular mountain setting and access to alpine recreation, the Park City area (Synderville basin) has undergone explosive residential and commercial growth over the past few decades. Due to a relative lack of surface water resources in the area, finding adequate groundwater to support the area is a continuing challenge for engineering geologists. Since there are limited alluvial aquifers in the area, most of the recently-developed groundwater has come from bedrock aquifers. This field trip will explore the regional bedrock aquifer system and investigate means of assessing aquifer potential in alpine settings.

Antelope Island: evidence of coastal processes of Great Salt Lake and Lake Bonneville: This field trip will review the history of climate change of the past 35,000 years, as documented by shoreline evidence of Lake Bonneville and Great Salt Lake. Specifically, we will examine landforms, materials, and processes that are (a) active along the shoreline of 2012; (b) associated with the highstand flooding of the 1980s; and (c) along the Gilbert level of Lake Bonneville/Great Salt Lake of about 12,000 b.p. Antelope Island has beautiful exposures of contrasting wave environments because, as an island, its shores are exposed to winds from diverse directions, and because, as a State Park, the evidence is well-preserved. Wear sensible shoes. Weather permitting, this field trip will include a couple-hour, not-challenging hike.

Guest Tours ...

Heber Valley Railroad - Ride and picnic on this historic railroad, along the beautiful eastern side of the spectacular Wasatch Range.

Utah Olympic Park and Park City - Visit the site of 2002 Olympic bobsled and Nordic ski jumping, and current training center for U.S. Olympic teams, then continue to the historic mining town of Park City for shop-

ping.

Red Butte Botanical Garden and Utah Museum of Natural History - The garden is a botanical wonder, and the new museum is an architectural and educational masterpiece.

Great Salt Lake and Antelope Island - Visit beautiful Antelope Island in the middle of Utah's inland sea to dip your feet in the famously salty water and to view wild bison and spectacular vistas of the Wasatch Range.

Special Event ...

Snowbird Ski and Summer Resort. Ride by bus from downtown Salt Lake City to Snowbird resort in spectacular U-shaped glacial Little Cottonwood Canyon. En route we will stop at the G.K. Gilbert Memorial Geologic Viewing Park to look at textbook examples of igneous intrusions, fault scarps, glacial moraines, and glacial geomorphology. At Snowbird we will ride the aerial tram 2,900 feet up to the top of 11,000 foot Hidden Peak. After the tram ride we will return to the Snowbird base for socializing, drinks, and dinner.




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EDUCATION SECTION

GEOLOGY CLUB NEWS

The North Carolina State University Geology Club

The NCSU Geology club has had a busy couple of months. We recently hosted a student summit on careers in the petroleum industry. We had a great turn out! Chesapeake Energy graciously catered the event. We had several guest speakers from multiple functional areas in the industry. We used this event as a recruiting tool to bring in new majors. As a result we had tons of undecided undergraduates!

We've also had the opportunity to learn about several exciting career paths in the geosciences. Beau Hodge from ERM put on a great talk about a day in the life of a consulting geologist, and potential career paths. We were privileged to listen to a talk on landslide hazards from AEG President Jenn Bauer. Joshua Roberts from Northern High School in Durham, N.C. came to speak to us about careers in geoscience education. Jeff Davison from Martin Marietta will be speaking to the Geology Club in March about career paths in mining geology.

Lastly, we are very excited about participating in the

Boys Scouts 4th annual merit badge in geology program. Several of our students will be hosting approximately 25 boy scouts on March 24th at NC State.

Earl Wells, President
North Carolina State University Geology Club
elwells@ncsu.edu



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EDUCATION SECTION

JAHNS LECTURER DR. SCOTT BURNS TO VISIT THE CAROLINAS SECTION

By Rick Kolb, Section Student Liaison

The Carolinas Section will host the Jahns Lecturer for the sixth straight year, and as usual take him on an extensive road trip through North and South Carolina. The 2011-12 Jahns Lecturer is Dr. Scott Burns, a geology professor at Portland State University and long an active member in AEG. Scott will make eight presentations over five days during the last week of March, starting at the College of Charleston and ending at the University of North Carolina at Charlotte. Scott will speak at two section meetings, one in Columbia and one in Raleigh, and at

six colleges. If you cannot see one of his talks at a section meeting, the colleges welcome your attendance at their schools. Scott's agenda is in the table below. Abstracts for Scott's talks are as follows; his bio is on page 4.

- 1) **Urban Landslides – Challenges to Forensic Engineering Geologists:** Each year landslides cause 25-50 deaths and on the average \$3.5 billion in damage in the United States. Many of these landslides occur in urban settings. Figuring out what caused these landslides and also how to prevent them in urban settings can be a challenge to forensic engineering geologists and geotechnical engineers. This talk will focus on lessons learned from case histories in urban settings, focusing on homes hit by landslides, homes that moved down the slope on landslides, reactivation of

(Continued on page 16)

Date	Route/Agenda	Talk Topic
Monday, March 26	Spend the day and present at the College of Charleston in the New Science Building. Time to be determined.	Urban Landslides
Tuesday, March 27	Have lunch with faculty and students at the University of South Carolina, visit the department, then present his talk at 3:30 PM in Room 305 of Sumwalt Hall	The Geology of Terroir
	Present at a joint meeting of the Carolinas Section and South Carolina Association of Environmental Professionals. Meeting starts at 6:30 at the office of Edens, 1221 Main Street in Columbia.	Urban Landslides
Wednesday, March 28	Lunch with faculty and students of UNC-Wilmington at 12:00, tour the department/campus and see the beach, then present at 3:30 in Room 114 of Deloach Hall. Drive to Raleigh after dinner.	Missoula Floods
Thursday, March 29	Present at Wake Technical Community College at 10:00 AM in Room 115 of the Engineering Technology Building	Urban Landslides
	NC State University for a lunch with faculty and students at 11:30, present at 1:30 PM in Jordan 1132, and spend the afternoon in the department.	Engineering Geology Challenges on the Cascadia Margin
	Present at Carolinas Section meeting at Sparian's in North Raleigh, 5:30-9:00	The Geology of Terroir
Friday, March 30	Lunch w/ UNC-Charlotte faculty/students, then present at 3:00 PM in Room 117 of McEniry Hall.	Urban Landslides

EDUCATION SECTION

(Continued from page 15)

ancient landslides, triggers such as precipitation and earthquakes, and vacant lots. Development of susceptibility maps, especially using LiDAR imagery, will be included. Different mitigation methods including different types of dewatering devices, walls, and freezing of the soil will be mentioned. In importance of lack of insurance for landslides on normal homeowner policies has great significance.

2) Cataclysms on the Columbia, the Great Missoula

Floods: One of the greatest set of geological events to ever have occurred in North America was given the name, the Missoula Floods. The floods originated when an ice dam broke in upper Idaho liberating waters impounded in back of it in Montana, scouring out large sections of eastern Washington and the lower Columbia River drainage basin. This talk will focus on the incredible story of discovery and development of the idea of the floods by J. Harlen Bretz and later geologists, and then will discuss the effect of the floods on the development of the landscape of 16,000 square miles of the Pacific Northwest. The floods occurred between 15,000 and 18,000 years ago. The idea of older floods will also be included.

3) Engineering Geology Challenges on the Cascadia Margin, Pacific Northwest, USA:

In the Pacific Northwest of the United States, the Juan de Fuca plate is being subducted under the North American Plate at the Cascadia Subduction Zone. This lecture will discuss the hazards of and the preparedness for ground shaking, liquefaction, landslides and tsunamis along the subduction zone. What are the differences of recurrence intervals for large earthquakes on the northern and southern margins? Much of the region was not thought to be an earthquake region so earthquake building standards are fairly recent. How does the chance of crustal, plate and subduction quakes affect building codes, emergency preparedness, siting of critical facilities, building of bridges, and transportation corridors in the region? What have we learned from recent subduction quakes around the world that can be applied to the Pacific Northwest? What can the region expect after a large quake?

4) The Mystery of Terroir – the Relationship of Geology, Soils, and Climate to Wine: (ED: See page 4 for the complete description of this talk, which will be given at the AEG Carolinas meeting on March 29 in Raleigh)

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EDUCATION SECTION

FREE STREAM WATCH EVENT AT BONNE'S CAVE PARK IN LEXINGTON

By Joy Fields, Stormwater Educator, PTRC

As rocks are weathered by water the interaction impacts both the water and the rocks. Due to this close relationship between geology and water AEG members may be interested in water quality. On April 14th DC FISH (Davidson County Citizens for Improving Stream Health) will hold a free Stream Watch Event at Bonne's Cave Park in Lexington North Carolina. This event will allow scientists and citizens to interact and learn how to monitor water quality. To register for this event please contact jfields@ptrc.org or 336-294-4950.

Please see the flyer on page 28 for more information. If you would like more detailed information do not hesitate to contact me. Thanks!

Joy Fields, Stormwater Educator, PTRC
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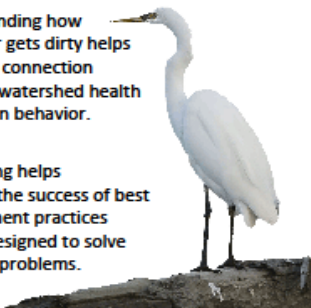
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- Observations by StreamWatch participants give local governments the ability to quickly identify and address problem areas in the watershed.
- StreamWatch data provides baseline conditions for waters that may otherwise go unmonitored.
- Understanding how our water gets dirty helps make the connection between watershed health and citizen behavior.
- Monitoring helps evaluate the success of best management practices (BMPs) designed to solve pollution problems.



OPPORTUNITIES

TO GET INVOLVED

BIOLOGICAL MONITORING

Learn to identify the critters that are essential for a healthy stream. Dip your nets and turn over rocks to see the secret life of the stream.



CHEMICAL MONITORING

Water chemistry plays an important role in the health, abundance and diversity of the aquatic life that can live in a stream. Learn to test for dissolved oxygen, nutrients, pH, bacteria and other parameters.

PHYSICAL MONITORING

Physical monitoring involves recording the characteristics of the stream itself and the area surrounding it. Learn how the physical aspects of a stream affect water quality.

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- Share your experience with people in your community.
- Meet new people and have fun!



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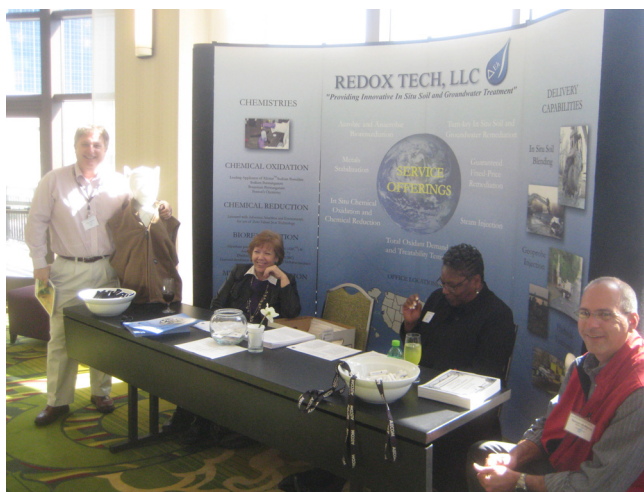
SUMMARY OF THIRD BIENNIAL SOUTHEASTERN IN SITU SOIL & GW REMEDIATION CONFERENCE

By Rick Kolb, Duncklee & Dunham

Redox Tech LLC held their third biennial remediation conference at the Renaissance Hotel in Raleigh on March 6 and 7, 2012. The Carolinas Section co-sponsored the event, as we did the second biennial conference in 2010. Our role was to advertise the conference among our members and send email blasts to our section's mailing list of over 1600. Approximately 200 attended



the conference, along with approximately 25 vendors who set up booths. AEG set up their booth at no charge in exchange for advertising the event. Dave Duncklee and Rick Kolb manned the booth during breaks and spoke to many AEG members and section sponsors, personnel from NCDENR, and non-members curious about AEG. Over 20 talks were presented on successes and failures of



various remedial techniques using injection of a wide variety of compounds, and several new methods were discussed.

The attendees asked many questions, and we speculate many walked away from the conference with ideas to apply to their projects. Redox Tech plans to hold the fourth conference in 2014.

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Paul M. Weaver, P.G.

Chair - Association of Environmental & Engineering Geologists, Carolinas Section

March 15, 2012

The Honorable Nikki R. Haley
Governor, State of South Carolina
1205 Pendleton Street
Columbia, South Carolina 29201

Re: South Carolina LLR 2012 Regulatory Report
Board of Registration for Geologists

Dear Governor Haley:

I am writing in response to the December 19, 2011 report sent to you by Catherine B. Templeton, Director of the South Carolina Department of Labor, Licensing and Regulation (LLR) recommending the elimination of professional licensing of geologists in the State of South Carolina. The Association of Environmental & Engineering Geologists – Carolinas Section (AEG), is very concerned about the recommendations made to you by the Director. We also find it of great concern that no members of the South Carolina Board of Registration for Geologists were consulted by the Director or her staff regarding the report prior to its issuance. We believe if this consultation had taken place, the misconceptions in the report would have been eliminated and the recommendations for eliminating registration of geologists may not have been included in the report. Attached is my rebuttal to the issues raised by the Director's report. I hope that this rebuttal will make it clear that eliminating the registration of geologists in South Carolina would be detrimental to the preservation of the health, safety, and welfare of the public.

I sincerely believe that the elimination of the registration of geologists in the State of South Carolina would be a grave mistake. It will not save South Carolina tax payers any money, since the Board of Registration for Geologists is self-funded through licensure fees. Instead, registration elimination will result in increased costs to the State due to many individuals and agencies having to institute geologists' competency investigation procedures that are now provided through registration. Even more importantly, the protection of the health and welfare of the public, the primary goal behind geologists' registration, will be seriously diminished without the registration of geologists in place in South Carolina. The vast majority of geologists who work in the State of South Carolina support registration/licensure and the protection to the public health, safety, welfare, and the environment that it provides.

Thank you for your time and consideration. Please do not go forward with eliminating the registration/licensure of geologists in the State of South Carolina.

Sincerely,

Paul M. Weaver, P.G.
Chair – AEG Carolinas Section

Attachment

CC: Honorables W. Greg Ryberg, Phil R. Leventis, William H. O'Dell, Robert Ford, Hugh K. Leatherman, Sr., Raymond E. Cleary, III, Kent M. Williams, Lee Bright, Michael T. Rose, Nikki G. Setzler, Glenn F. McConnell, Glenn G. Reese, Thomas C. Alexander, Kevin L. Bryant, Joel Lourie, A. Shane Massey, Floyd Nicholson

(Continued from page 20)

Rebuttal to Director Templeton's Report Regarding the Need for Registration/Licensing of Geologists

It appears from the Director's report that she needs more information about the Geologists Registration Program she is responsible for administering. Following are just a few of the things Licensed Geologists do:

- Registered geologists are the professionals called upon when hazardous or potentially hazardous materials are discovered in soils or groundwater. We analyze the extent of the contamination, coordinate with state and federal agencies to ascertain the potential harm to the public, and we design and implement the cleanup of the contamination so that the future health and safety of the public is assured.
- Registered geologists evaluate and analyze the below ground conditions prior to the design and construction of buildings, bridges, tunnels, roadways, and retaining walls. We then use these evaluations and analyses to provide critical information to engineers that enable them to design foundations, drainage, and slopes that are appropriate for conditions encountered. Should the information and analysis geologists provide be inadequate or erroneous, the integrity of the completed facilities and infrastructure could be at risk.
- Registered geologists evaluate and analyze soil and rock slopes for stability and provide critical information for the design solutions to stabilize potentially hazardous slopes. Slope instability, as evidenced in numerous instances, can result in catastrophic consequences including loss of roadways, structures, and human life.
- Registered geologists serve as the eyes and ears of engineers and architects during foundation installation on structure construction projects. In this capacity, they verify that foundations are constructed according to the specifications, and they use their expertise to troubleshoot when unanticipated subsurface conditions are encountered to assure that the completed

foundations can support without failure the completed structure. Inadequately or improperly constructed foundations may result in structural failure resulting in great property damage and loss of life.

The Director's report states that since the establishment of the South Carolina Board of Registration of Geologists in 1986, it has "run roughshod over the statutory threshold for professional licensure" based on the assertion that licensure is not necessary for the "preservation of the health, safety, and welfare of the public". We herein assert that the registration procedures for geologists followed by the State of South Carolina, specifically the requirements that all applicants have sufficient education, work experience, and knowledge as evidenced by having passed the rigorous National Association of Boards of Geology (ASBOG) exam, set a qualification threshold that is necessary to preserve the health, safety, and welfare of the public.

The Director's report also states that "each project for which a license to practice public geology is required is a project that is already subject to another independent regulatory scheme which is structured to provide primary protection for the environment". This is a fallacious assumption. Regulatory agencies depend on the regulatory boards to verify that the professionals providing reports and information are qualified to practice. Administrators of "regulatory schemes", as cited by the Director, do not have the expertise, staffing, or funding to perform an in-depth background, experience, and recommendations investigation of every geologist who performs work coming under their jurisdiction; the geologist registration verifies that the professional performing the work possesses the necessary skills and experience to perform the work. If these administrators are forced to perform competency investigations on every geologist under their jurisdiction due to the elimination of registration of geologists, then the number of administrators will have to increase with administrators in each department duplicating the work done by administrators in other departments thus leading to a larger state payroll (note that the Board of Registration for Geologists is self-funded from licensing fees re-

(Continued on page 22)

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(Continued from page 21)

quiring no outlay of public money).

Another statement made in the report is the “low risk of unregulated practice and absence of any residual threat to public health, safety, or welfare is supported by low levels of complaint and disciplinary action”. Forgive me if I misread this statement, but it appears to say that since registered geologists are well behaved, perform their work with professionalism and attention to detail, and do not invite public criticism, that there is no reason to have a system in place (registration) to help assure that only qualified geologists are able to practice geology. I would think instead that the fact that only one individual has been cited for unlicensed practice and that no disciplinary action has been taken against any registered geologist for professional negligence or unethical conduct, is a verification that the registration of geologists in South Carolina has been very successful and has accomplished exactly what it was intended to accomplish.

The Director states that “experience shows consumers rarely rely on licensure in selecting a geologist” and that “only” 1501 general searches for geologists were performed on the LLR website in 2011. That may be due to the fact that individuals advertising their services as geologists are registered. Considering there were 575 licenses as of September 2011, 1501 searches for registered geologists cited in one year is not a small number.

Another argument used by the Director is that

“Geologists typically work for sophisticated or institutional clients capable of safeguarding their own interests without reference to licensure or government intervention” and that “less than 2.4 percent of geoscientists are self-employed”. “Sophisticated or institutional clients” **rely on the registration of geologists when hiring geologists in order to safeguard their interests.** The burden of sophisticated testing like that utilized for geologists licensure would be too much for most of these institutions or companies to undertake. Imagine the costs and lost productivity that would result from every governmental agency and private company instituting procedures to verify experience and competency to the extent that is verified through the geologists registration procedure! This cost is presently covered by the licensee from the licensing fee. Even if “less than 2.4 percent of geoscientists are self-employed”, it is important to verify their competency to protect the public.

The final argument used by the Director is that “professional associations certify the education and experience of geologists independent of state licensure”. The example cited is the “Certified Professional Geologists” designation offered by the American Institute of Professional Geologists (AIPG). AIPG is the only professional association that “certifies” geologists, and the “certification” is based on the recommendation of three other geologists and paying a fee rather than an exam to test competency as is required for state licensure.

AEG and the majority of other professional associations representing geologists fully support state registration/licensure of geologists in conjunction with ASBOG.



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**Submit a proposal for any of the above online
at www.geosociety.org starting the first week of October.**

Deadlines:

Field Trip Proposal: 1 December 2011

Topical Session Proposal: 10 January 2012

Short Course Proposal: 1 February 2012

Abstract Deadline: 14 August 2012

Contact For More Information

Missy Eppes meppes@uncc.edu

John Diemer jadiemer@uncc.edu

Andy Bobyarchick arbobyar@uncc.edu

Rob Young ryoung@email.wcu.edu

See you in Charlotte!

CAROLINAS SECTION BREW PUB SOCIALS FOR WINTER/SPRING 2012

By Rick Kolb, Duncklee & Dunham

The Carolinas Section of AEG held their second Brewpub Social on January 19 at the Bull City Burger and Brewery in downtown Durham. The dozen or so that attended had a good time, and as expected, the beer was good. The restaurant was quite busy. Next time you're in downtown Durham at mealtime, give it a try. It's at 107 East Parrish Street. It opened a year ago and serves lunch and dinner with approximately 90 seats inside plus 35 seats of outside patio dining.

We held our third Brewpub Social outside of Raleigh, and headed west to the Triad. We visited Foothills Brewery in at 638 West Fourth Street in downtown Winston-Salem. The place was bustling, and the food was excellent. For those living in the Triad, do try out this brewpub. The restaurants and bars around the brewpub on Fourth Street were really busy. We had about 15 attend our social, and it was a lively group, starting before the scheduled hour and going on past 8:00 PM. The response from those attending was very positive, and some asked for an encore. Maybe we'll come back here when it warms up and we can take over the sidewalk seating.

We will hold our fourth Brewpub Social at the South

Bar of Pack's Tavern in Asheville on Friday, April 27, starting at 6:30. At the suggestion of AEG's president, Jenn Bauer, we have planned this social to coincide with AEG's Mid-Year Board Meeting, which starts the next day in Asheville. Numerous AEG section chairs and EC members from across the country will be coming into Asheville on that Friday, and we thought it'd be a good time for a social. Don't feel you have to be an AEG officer to attend. All are welcome, and we will invite our usual co-hosts for the section meeting we hold annually in Asheville, the Western Branch of ASCE. It should be a lot of fun. Since we will reserve an area for this social, please RSVP to Rick Kolb at rkolb0915@aol.com if you plan to attend.

Tentative plans are to hold the fifth Brewpub Social at the Big Boss Brewery in Raleigh in May. The date for this social has not yet been set. Since the brewery doesn't sell beer, we will plan for a date the food trucks are at the brewery, and right now those dates have not been established.

This summer, we are considering Friday night Brewpub Socials at the coast, contemplating the Front Street Brewpub in Wilmington or the Weeping Radish and Outer Banks breweries on the Outer Banks, to catch those at the beach for vacation. If you like this idea, please Rick Kolb know at rkolb0915@aol.com. If he doesn't have some response, he won't attempt to set one of these up.



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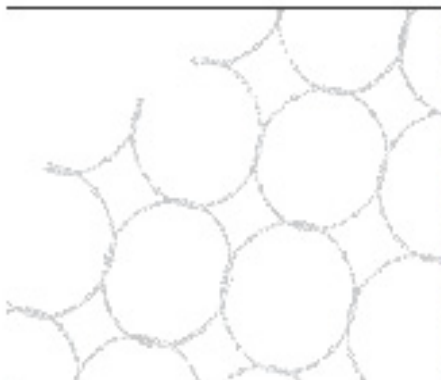
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TECHNICAL SECTION

BOULDER INFRASTRUCTURE REPAIRED AND TESTED

By James Tate, Kevin Day, Dallas Lineberry, Jason Vestal, and Frank Amend

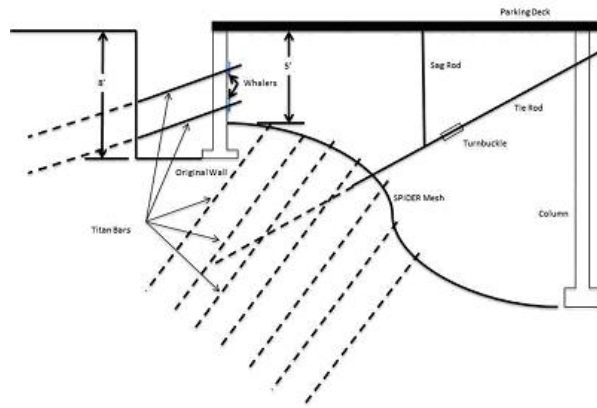
Boone, North Carolina

A destabilized boulder wall beneath a parking deck was discovered during a routine inspection of a condominium complex located near Boone, North Carolina. There was significant potential for the large boulders underneath to come loose, strike the support pillars and cause the entire parking deck to collapse. The hazard potential was so great that the parking deck was immediately closed.



James Tate, Senior Project Engineer of Taylor and Viola Structural Engineers, spearheaded the hazard evaluation and offered recommendations, "During the initial evaluation of the boulder retaining wall and parking deck, we looked at several different methods for stabilizing the boulder wall and the deck to prevent further deterioration and eventual collapse."

First considered was a cast in place retaining wall with backfill against the boulders, but the limitation for tamping between the two walls made this option expensive and too cumbersome. Shotcrete was then considered but fears regarding adequate drainage and freeze/thaw movement eliminated this as an option.



To address these considerations, as well as wanting to preserve as much of the infrastructure as possible, Geobruigg's SPIDER® net system was finally chosen as the most appropriate solution. Tate concluded, "Benefits of using the net are that it blends in with the natural landscape...and we didn't have to worry about storm water drainage through the rock."

A unique design was then conceived by Taylor and Viola which included anchoring the existing retaining wall to prevent further movement, encapsulating the boulder field with the high tensile net, then pinning the net against the boulders themselves. Boone Construction Company constructed the design, with Foundation Repair Services as the sub to evacuate an 8 ft deep pit on the uphill side of the existing retaining wall. Titan 30/16 bars were driven into the bedrock at an angle towards the wall and stubbed out just before the wall itself.

The wall was cored through so that extensions could be screwed into the driven Titan bars extending through the wall and secured against two (2) 15 inch channel whalers and bearing plates placed on the outside of the retaining wall (see Fig. 1) This stabilized the wall.

Dallas Lineberry of Foundation Repair Services

(Continued on page 27)



TECHNICAL SECTION

(Continued from page 26)

(FRS) explained, “After installing the tiebacks into the rock to secure the upper concrete retaining wall, it was time to move to the lower side. This meant that an access road had to be built. With the help of a local grading contractor, and some really brave equipment operators, the access road was in place and we were drilling on the lower side to secure the boulder wall.”

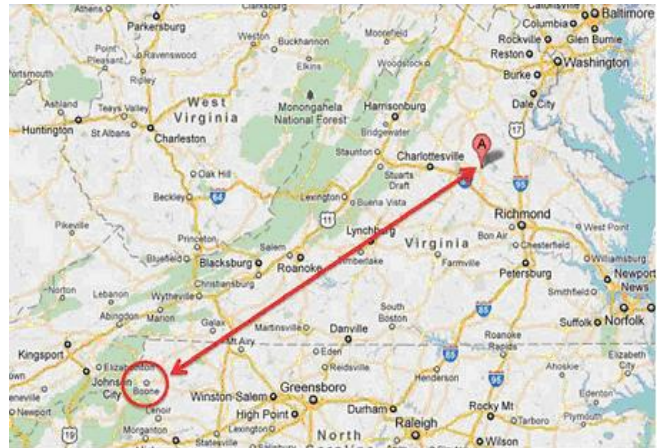
The SPIDER® net was first attached to the bottom channel whaler’s row of anchors above the boulders. The net was unrolled to drape over the rock face. Next, FRS drilled rock anchors down each side and along the bottom of the boulder wall and the net was secured along its perimeter.

“This made everyone feel a little better about working at the bottom of the wall!”

“The final stage of drilling was to drill the remaining rock anchors throughout the middle section of the boulder wall. As the anchors were installed and reached their capacity, the spike plates were added and secured the SPIDER® net against the rock. The anchors were placed at roughly 8 ft centers. Approximately fifty (50) anchors were used.”

“The rock anchors consisted of Titan 30/16 and Titan 40/20 hollow bar injection anchors drilled at five to ten feet into rock to develop their design capacities. After installing all the anchors, a boundary rope was added around the perimeter of the net. All the spike plates were then tightened to the design torque against the net to secure the whole system.”

Jason Vestal of Boon Construction Company recalls finishing the work. “After the structural work was completed, we still had to furnish and install all new brick pavers, a rubber membrane above the precast deck side and all sand-setting materials. Then we installed new landscaping and mulch around the storm water junction boxes and along the access road. Finally, we re-laid the stone veneer walls to match the existing facing around the new trench drain lines with salvaged stone from onsite.” From design to completion the project took five weeks.



BUT THEN IT WAS TESTED...

On August 23, 2011, at 1:51 pm EDT a magnitude 5.8 earthquake radiated from its epicenter—38 miles northwest of Richmond, VA. Several aftershocks, as large as 4.5 in magnitude occurred after the main tremor. The quake was felt across more than a dozen states, even the jobsite at Boone, North Carolina.

On the parking deck several of the contractors stood in disbelief. Fortunately, all the spike plates had been tensioned the day prior, so the structural portion of the project was secure. Kevin Day of FRS remembers watching the condos and the parking deck start to rock back and forth. His view of the first test of the system: “Due to the flexibility of the SPIDER® net, and that the system was securely tensioned to the bedrock behind the slope, the entire system was flexible enough and strong enough that nothing sheared and nothing moved. A more rigid system...probably would not have fared so well under the same circumstances.”

“We monitored the boulder wall quite often during construction and certainly after the quake and there was essentially no movement. One point on the wall had a measured deflection of 0.03 inch. We consider the entire project to have been tested and to be a success!”

Authors: James Tate (1), Kevin Day (2), Dallas Lineberry (3), Jason Vestal (4) and Frank Amend (5)
 James Tate, PE; Taylor & Viola Structural Engineers, jtate@taylorviola.com (828) 328-6331
 Kevin Day, Foundation Repair Services, Inc., kday@foundationservicesinc.com (704) 545-0206
 Dallas Lineberry, Foundation Repair Services, Inc., dlineberry@foundationserviceinc.com (704) 545-0206
 Jason Vestal, Boone Construction Company, jason@boonecc.com (828) 963-8607
 Frank Amend, PE; Geobrugg North America, LLC, frank.amend@geobrugg.com (252) 937-2552

CALENDAR OF EVENTS - 2012

Geological Events in the Carolinas

Courtesy of AEG Carolinas Section – www.aegcarolinas.org. Last updated March 20, 2012

Send updates/corrections to Rick Kolb, Duncklee & Dunham, rkolb0915@aol.com.

Meeting Date, Time, and Location are Subject to Change – Please Verify Prior to the Meeting

Date: Friday, March 23, 2012

Event: Visiting Professionals Presentation at Appalachian State University

Location: 4:00-5:30, Room 023, Rankin Science Complex West, App State

Contact: Rick Kolb, rkolb0915@aol.com

Date: Friday, March 23, 2012

Event: Visiting Professionals Presentation at East Carolina University

Location: 5:00-6:30, Room 309, Graham Building, ECU

Contact: Rick Kolb, rkolb0915@aol.com

Date: Monday, March 26, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on Urban Landslides

Location: New Sciences Building, College of Charleston

Contact: Dr. Norm Levine, levinen@cofc.edu

Date: Tuesday, March 27, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on The Geology of Terroir

Location: 3:30 PM, Room 305, Sumwalt Hall, University of South Carolina, Columbia

Contact: Raymond Knox, rknox@schnabel-eng.com

Date: Tuesday, March 27, 2012

Event: Joint meeting of AEG Carolinas Section and South Carolina Association of Environmental Professionals

Speaker: Presentation by 2011-12 Jahns Lecturer Scott Burns on Urban Landslides

Location: 6:30 PM social, 7:00 presentation at Edens, 1221 Main Street; Columbia, North Carolina

Contact: Raymond Knox, rknox@schnabel-eng.com

Date: Wednesday, March 28, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on the Missoula Floods

Location: 3:30 PM, Room 3:30, Deloach Hall, University of North Carolina at Wilmington

Contact: Dr. Eric Henry, henrye@uncw.edu

Date: Thursday, March 29, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on Urban Landslides

Location: 10:00 AM, Room 115, Engineering Technology Building, Wake Technical Community College

Contact: Gretchen Miller, gmiller@waketech.edu

Date: Thursday, March 29, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on Engineering Geology Challenges in the Cascades

Location: 1:30 PM, Room 1132, Jordan Hall, North Carolina State University, Raleigh

Contact: Dr. Del Bohnenstiehl, drbohlen@ncsu.com

Date: Thursday, March 29, 2012

Event: AEG Carolinas Section Spring Meeting

Speaker: Presentation by 2011-12 Jahns Lecturer Scott Burns on The Geology of Terroir

Location: 5:30-7:00 social, 7:00 dinner, 8:00 presentation at Sparian's Bowling Boutique and Bistro; Raleigh

Contact: Rick Kolb, rkolb0915@aol.com

Date: Friday, March 30, 2012

Event: Presentation by 2011-12 Jahns Lecturer Scott Burns on Urban Landslides

Location: 3:00 PM, Room 117, McNery Hall, University of North Carolina at Charlotte

Contact: Dr. John Diemer, jadiemer@uncc.edu

Date: Saturday, March 31 - Monday, April 2, 2012

Event: Geological Society of America Southeastern Section Annual Meeting

Location: Renaissance Hotel; downtown Asheville, North Carolina

Plan to attend? Help man the AEG booth. Email pweaver@espassociates.com

Date: Tuesday, April 3, 2012 (meetings are held monthly on the first Tuesday of the month)

(Continued on page 29)

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(CALENDAR—Continued from page 28)

Event: Engineers Without Borders monthly meeting,
Research Triangle Park Professional Chapter
Location: 6:30-8:00 PM at the offices of Camp Dresser
& McKee; 5400 Glenwood Avenue, Suite 300;
Raleigh
Contact: Sarah Kahn, snkahn@gmail.com

Date: Monday, April 9, 2012
Event: Visiting Professionals Presentation at Western
Carolina University
Location: 5:00-6:30, Room 355, Stillwell Building,
WCU
Contact: Rick Kolb, rkolb0915@aol.com

Date: April 13-29, 2012
Event: North Carolina Science Festival
Location: Events across the state
Details: www.ncsciencefestival.org

Date: April 18, 2012
Event: Quarterly meeting of the North Carolina Board
for the Licensing of Geologists
Location: Starts at 9:00 AM at Upton Associates, 3733
Benson Dr. in Raleigh; morning session open to the
public
Contact: ncblg@bellsouth.net or Rick Kolb,
rkolb0915@aol.com

Date: April 24-25, 2011
Event: Science-Engineering-Techn Congressional Visit
Days
More information: www.setcvd.org
Location: Washington, D.C.
Contact: Rick Kolb, Advocacy Committee Chairman,
rkolb0915@aol.com

Date: Friday, April 27, 2012
Event: Fourth Carolinas Section Brewpub Social
Location: 6:30 PM - 8:30 PM or whenever, Pack's
Tavern, 20 South Spruce Street, Asheville
Contact: Adam Phillips, adam.phillips@sgs.com or
Rick Kolb, rkolb0915@aol.com
Date: Saturday and Sunday, April 28 and 29, 2012

Event: AEG Mid-Year Board Meeting
Location: 9:00 AM Saturday to 1:00 PM Sunday,
North Carolina Arboretum, 100 Frederick Law
Olmstead Way
Details: Becky Roland, broland@aegweb.org

Date: Tuesday, May 1, 2012
Event: Engineers Without Borders monthly meeting,
Research Triangle Park Professional Chapter

Location: 6:30-8:00 PM at the offices of Camp Dresser
& McKee; 5400 Glenwood Avenue, Suite 300;
Raleigh
Contact: Sarah Kahn, snkahn@gmail.com

Date: April 13-29, 2012
Event: North Carolina Science Festival
Location: Events across the state
Details: www.ncsciencefestival.org

Date: Tuesday, June 5, 2012
Event: Engineers Without Borders monthly meeting,
Research Triangle Park Professional Chapter
Location: 6:30-8:00 PM at the offices of Camp Dresser
& McKee; 5400 Glenwood Avenue, Suite 300;
Raleigh
Contact: Sarah Kahn, snkahn@gmail.com

Date: September 11-12, 2012
Event: 5th Annual Geosciences Congressional Visit
Days
More information: [http://www.agiweb.org/gap/events/
geocvd/index.html](http://www.agiweb.org/gap/events/geocvd/index.html)
Location: Washington, D.C.
Contact: Rick Kolb, Advocacy Committee Chairman,
rkolb0915@aol.com

Date: September 15-23, 2012
Event: AEG Annual Meeting
Location: Hilton Hotel; Salt Lake City, Utah
Date: November 4-7, 2012
Event: Geological Society of America Annual Meeting
Location: Charlotte Convention Center; Charlotte,
North Carolina

Found the answer to
the quiz on page 2
yet?



Mark Lassiter, P.G.
President

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Phone: (864) 288-1986
Fax: (864) 288-2272
E-mail: mlassiter@aedrilling.com

MEMBERSHIP REQUIREMENTS

MEMBER: Applicants for Member Class shall hold a degree in geology, engineering geology or geological engineering, or a degree in a related professional field with 30 semester-hours of credit in the geosciences. In addition an applicant shall be practicing in the field of Engineering Geology, Environmental Geology or Hydrogeology. Annual Dues for new (first-time) Members = \$75.00 per year for the first year of membership. Otherwise Annual Dues = \$115.00. Applicants who qualify for Member Class, but are engaged in full-time teaching at the Primary, Secondary or post-secondary level are eligible for Teacher Status (Annual Dues = \$35.00).

AFFILIATE: Applicants for Affiliate Member Class shall be scientists or engineers who work with engineering geologists; teachers engaged in middle-school and high school Earth Science education; or persons interested in engineering geology. Annual Dues = \$75.00 (Teacher Dues = \$35.00)

STUDENT: Applicants for Student Member Class shall be full-time students enrolled in an academic program in the geosciences or in a related field in engineering. Annual Dues = FREE.

INTERNATIONAL: Applicants shall hold the same requirements as for Member Class, but may select from the following dues schedule: \$35, which includes the *Environmental and Engineering Geology Journal*; \$45 with the *Journal*, the *Annual Directory* and the *Annual Meeting Abstracts*; or \$55 with the *Journal*, *Annual Directory*, *Annual Meeting Abstracts* and the *AEG News*.

AEG memberships are based on calendar year. Applications received after October 1 will be entered for following calendar year.

APPLICATION FORM

Please complete this form and mail it with your Annual Dues payment to the Association's Headquarters office for processing. New member applicants do not pay Section dues for their initial year of membership.

Name: _____
(Please print your name as you would like it shown on your membership certificate.)

PREFERRED ADDRESS: _____

WORK PHONE: _____ FAX: _____

PREFERRED E-MAIL: _____

Second Address: _____

Home Phone: _____

DESIRED CLASS OF MEMBERSHIP: _____ ANNUAL DUES AMOUNT: _____

CERTIFICATION: _____
(Signature)

My signature attests that, to the best of my knowledge, I meet the academic and practice requirements for the membership class I have requested and that all entries on this application are true and correct. I also authorize AEG to charge my credit card for the dues payment, if I selected the credit card payment option.

☐ Enclosed is my check for the amount of Annual Dues of \$ _____

Credit Card Payment Option

☐ Discover ☐ Master Card ☐ Visa Amount of Dues to be charged to my card = \$ _____

Card Number: _____ Expiration Date: _____

SUBMISSION: Send this form with your check or credit card authorization to:
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Phone: 303-737-2926; FAX: 303-737-2969; AEG Web: www.aegweb.org



AEG CAROLINAS SECTION – SPONSOR INFORMATION

The Carolinas Section of AEG supports many of its activities with financial assistance provided by our sponsors. Our activities include quarterly meetings, periodic field trips and seminars, a quarterly newsletter, and email announcements about our meetings and geoscience related activities. In addition, we donate large quantities of educational resources to science teachers.

We offer several levels of sponsorship, but they all have one goal: to keep the sponsor's name in front of our members and to bring you business. We have a real commitment to connecting our sponsors to potential buyers and will do all we can to help you build your business. Most of our members are practicing professionals with responsibility for selecting subcontractors, so our group is a great place to find new customers and to catch up with existing clients in an informal setting.

Our sponsors provide the financial support that allows us to have reasonably priced dinner meetings, host seminars, provide discounted dinner meeting costs for students and teachers, underwrite the cost of newsletters and our web site, provide geoscience mentors for students and young professionals, and support science education tools to our teachers and in our schools. All costs listed below are per year and end in December. New sponsorships received after October will continue to December of the following year.

Silver Sponsor (\$250):

GeoNews Newsletter: Business card size ad (2" high x 3-1/2" wide), four times per year.

Meetings: Listing on a Sponsor Poster, located at sign-in table. Verbal acknowledgement by name in Chairman's introductory comments.

Meeting Exhibits: Space for tabletop display at one meeting. Cost of meeting waived for one person on the exhibit date.

Email Announcements: Listing of your company name on each AEG Carolinas Section email announcement (our email list is currently over 1,000 people)

Web Page: Acknowledgement on the AEG Carolinas Section Web Page, www.aegcarolinas.org, with a link to your site.

Gold Sponsor (\$375):

GeoNews Newsletter: Quarter-Page ad (4-1/2" high x 3-1/2" wide), four times per year.

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