

SPRING 2014

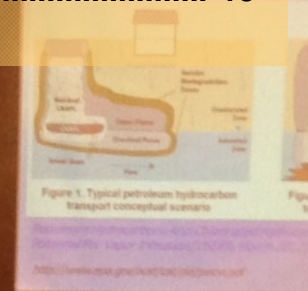
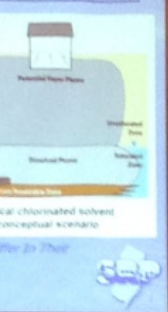
GEO NEWS

Newsletter of the Association of Environmental & Engineering Geologists, Carolinas Section
2009, 2011, and 2013 AEG Section of the Year

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SAVE THE DATE

Spring Meeting
Gregory L. Hempen, 2013-2014
Distinguished Jahns Lecturer
Thursday, March 27, 2014
Natty Greene's, Raleigh

GEONEWS FALL 2013
Issue Date: December 21, 2013
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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, announcements, student member news, 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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AEG National Website www.aegweb.org

Cover: (Richard Seig) Vapor Intrusion Conference

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MESSAGE FROM THE CHAIR*By Alex Rutledge, PG, PE**Chair—AEG Carolinas Section*

The Carolinas Section has started 2014 with several big events, and we are working hard to keep the momentum going as spring arrives. The rousing success of the recent VI conference titled *Vapor Intrusion: The Conference - Legal, Technical and Regulatory Perspective*, with over 200 attendees, was a great way to start the year. I would like to thank **Liz Depoy**, **Angie Frizzell**, **Madeline German**, **Rick Kolb**, **Walt Plekan**, **Richard Seig**, **Brian Smith**, and **Tom Veratti** for their efforts in making this conference such a great event. Refer to **Madeline German's** article in this issue of GeoNews for the details. In addition to organizing the VI conference, the Carolinas Section sponsored the Fourth Biennial Southeastern In Situ Soil and Groundwater Remediation Conference on March 4-5th, 2014. In the words of **Rick Kolb**, who played a major role in both events, "Our sponsorship and involvement in these types of events helps raise the profile of AEG, both inside and outside of the profession."

The Carolinas Section recently concluded our first section field trip in years, thanks to the hard work of **Sue Buchanan**, our Field Trip Chair, and others. The field trip included a hike along two separate stretches of the Falls Lake Trail examining crystalline rocks of the Raleigh and Crabtree terranes, exposures of Triassic sedimentary rocks of the Deep River Mesozoic basin, as well as Jurassic diabase. The field trip was led by **Edward (Skip) Stoddard**, a "semi-retired" geologist at the North Carolina Geological Survey and former professor at North Carolina State University; **Phil Bradley**, the Senior Piedmont Geologist for the North Carolina Geological Survey; and **Tyler Clark**, a geology instructor at Wake Technical Community College. For more details on the field trip, see Sue Buchanan's article in this issue of GeoNews. Our next issue of GeoNews will feature a preview of our fall field trip in Asheville, NC

Our last section meeting on January 22 in Concord, NC had a solid turnout, and **Gary Luce**, President of AEG, gave a great talk titled *Tailings Dams 101 (Tailings Dams vs Hydro Dams – Design and Construction)*. The meeting was a joint dinner meeting with the Southern Branch of the North Carolina Section of the American Society of Civil Engineers (ASCE). Our section often looks for ways to collaborate with engineers, and having joint meetings is a great way to share knowledge, experiences, and build camaraderie between two great professions.

The 2013-14 Richard H. Jahns Distinguished Lecturer in Engineering Geology, **Dr. Greg Hempen**, PE, RG, will be in the Carolinas Section from March 26-29th, 2014. The Jahns lectureship was established in 1988 to provide

funding for a distinguished Engineering Geologist to present an annual series of lectures at academic institutions, in order to increase student awareness about careers in Engineering Geology. We have an ambitious schedule for Dr. Hempen while he is here, including talks at five universities and colleges across North and South Carolina. In addition to the formal presentations he plans to give at the College of Charleston, Guildford College, Wake Technical Community College, University of North Carolina at Chapel Hill, and East Carolina University, Dr. Hempen plans to spend as much time as possible with the students at these schools so he can share his experiences and provide them with valuable insight as they start their careers in geology.

Dr. Greg Hempen will also be presenting at our next section meeting, which is a joint dinner meeting with the Eastern Branch of the North Carolina Section of ASCE, on March 27th at Natty Greene's in Raleigh, NC. His talk title is *What's My Line? Site Assessment! (AKA Applying Geophysics in Site Assessment)*. In the words of Dr. Hempen about his talk, "The presentation on the applied geologist's most important duty, site assessment, develops how geophysics may advance the information at a site and reduce the risk of unknown site conditions."

Rick Kolb will soon be organizing another round of Visiting Professional presentations at local universities and colleges, so please let him know if you are interested in participating. You should also contact Rick if you are interested in becoming a sponsor of the AEG Carolinas Section, since he is now serving as our section Sponsorship Chair.

As always, we appreciate any feedback you have to give, so I encourage you to contact me or other members of the Board with your suggestions or concerns related to our section.

Sincerely,



Alex Rutledge, PG, PE
frutledge@schnabel-eng.com

AEG CAROLINAS SECTION 4Q TREASURER'S REPORT

By Dr. Briget Doyle, Section Treasurer

AEG Carolinas Section Treasurer's Quarterly Report



October 1, 2013 to December 31, 2013

BALANCE As Of October 1, 2013

Checking Account	\$5,216.20
Savings Account	\$16,677.38
	\$21,893.58

INCOME

Dinner Meetings

Natty Greens - Greensboro	\$525.00
---------------------------	----------

Interest

Savings account	\$1.62
-----------------	--------

SUBTOTAL - INCOME \$526.62

EXPENSES

Dinner Meetings

Natty Greens - Greensboro	\$1,302.74
---------------------------	------------

Dave and Bust-ers - Concord	\$749.70
-----------------------------	----------

Banking Fees

Wells Fargo Fees	\$114.04
------------------	----------

Credit Card Reader Fees	\$0.55
-------------------------	--------

Earth Science Week Kits \$3,975.00

Awards

Outstanding Earth Science Educator	\$250.00
------------------------------------	----------

Outstanding Earth Science Teacher (2) \$250.00

Additional Expenses

Annual Meeting Expenses \$342.04

NCBLG Roster \$35.00

SUBTOTAL - EXPENSES \$7,019.07

BALANCE As Of December 31, 2013

Checking Account \$3,722.13

Savings Account \$11,679.00

TOTAL \$15,401.13



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VAPOR INTRUSION CONFERENCE A SUCCESS

By Madeline German

As you may have seen on the AEG website or in an email, the Carolinas Section of AEG, in partnership with the North Carolina Department of Environment and Natural Resources, presented Vapor Intrusion: The Conference – Legal, Technical and Regulatory Perspectives to 235 attendees at the Embassy Suites in Cary, North Carolina on January 23 and 24. Regulators from multiple states, environmental attorneys from up and down the east coast, and countless consultants were in attendance. The conference was an overwhelming success.

This was the first conference of its kind in the southeastern region, providing a broad spectrum of information regarding vapor intrusion; and highlighting AEG as a local and national organization. Many conference attendees visited the AEG booth and inquired about their local section of AEG or asked how to join the Carolina's Section.

This conference boasted a phenomenal line-up of nationally recognized experts in vapor intrusion. Even AEG President Gary Luce, who had presented at a section meeting in Charlotte the night before the conference, was able to attend and enjoy the event. Gary is one of many who hope we can repeat the success of this event in two years. Much of the success was due to 20 fantastic exhibitors and our five amazing sponsors: ConTest Labs, Alpha Analytical, Land Science Technologies/Regenesis, ESC Lab Sciences and AE Drilling Services, Inc.

In the last few years, the U.S. Southeast region has entered the realm of VI, and is quickly learning much from the northern and western states, who have been dealing with this issue for many years. With rapid increases in technology and as additional research is performed, more environmental consultants, regulators and attorneys will need updates on this important issue. And one day, we hope the EPA will finalize their draft guidance.



Rod Thompson from Risk Options, LLC, kick-started the conference on Thursday morning with his Keynote talk titled *TCE Non-Cancer and Developmental Risk: Issues and Interim Resolution*. Henry Schuver, from the U.S. EPA, presented the Keynote address Friday morning with a talk titled *Geological Influences on Indoor Air Quality and Human Health*. The event concluded Friday afternoon with a panel discussion by regulators from Georgia, Indiana, New Jersey, North Carolina, Tennessee and Virginia.

Finally, huge thanks to the planning committee -- Liz Depoy, Angie Frizzell, Madeline German, Rick Kolb, Walt Plekan, Richard Seig, Brian Smith -and Tom Veratti, -- who worked diligently to make sure this program would be a success. All but Richard, an environmental attorney, are AEG members.



The planning committee (photo credit: Rick Kolb)

Overall, the conference was a financial success for the Carolina's Section as well as a quality conference that provided access to the best tools, knowledge and perspectives.

(Continued on page 6)



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(Continued from page 5)

tives on Vapor Intrusion today. We look forward to repeating its success in other sections and again in the Carolina's. For a more in-depth summary of the conference please refer to your Spring AEG News. Vapor Intrusion presentations are available on the Carolina's Section Website: <http://www.aegcarolinas.org/>



photo credit: Richard Sieg



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**JAHNS LECTURER TO SPEAK AT
SPRING SECTION MEETING**

Joint Dinner/Meeting
*The Carolinas Section of the
Association of Environmental &
Engineering Geologists
and
The Eastern Branch, North
Carolina Section of the
American Society of Civil
Engineers*

Greg's Abstract

WHAT'S MY LINE? SITE ASSESSMENT!
[AKA: Applying Geophysics in Site
Assessment]

HEMPEN, Gregory L., 2013-2014 Richard H. Jahns Distinguished Lecturer, URS Corporation, 1001 Highlands Plaza Drive West, Suite 300, St. Louis, MO 63110, greg.hempen@urs.com

The presentation on the applied geologist's most important duty, site assessment, develops how geophysics may advance the information at a site and reduce the risk of unknown site conditions.

Site assessment (or site characterization) has four components: literature search, regional geologic assessment, general field study, and detailed (or specialized) site study. The conceptual (site) model is developed from the critical geologic topics and hazards, which in turn are pertinent to the project's requirements. For most sites the depositional environment, most recent erosional processes, geohydrology, geomorphology, and anthropogenic impacts will minimally engender study needs to determine the conceptual model for the particular project envisioned. Site characterization's components need to be planned and sequenced (or phased) to accomplish

(Continued on page 8)

SPRING SECTION MEETING DETAILS:

Place: Natty Greene's Pub and Brewing,
505 W Jones St, Raleigh, NC 27603

Date: Thursday, March 27, 2014

Time: 5:30 PM socializing begins, 7:00
buffet dinner, 8:00 Greg's talk

Cost: AEG and ASCE members \$25, non-
members \$30, teachers \$10,
students free with college ID

Reservations: Please make reservations with
Madeline German
(madeline@smithgardnerinc.com)
by 5:00 PM on Monday, March 24,
2014

(Continued from page 7)

all the work that should be conducted. Yet the phases of completing each of the latter three components are interdependent upon the data collected, the data analyses, and posited solution. So the actual work may not be completely appraised without the intervening processing of the information collected. Upon developing the site's data and acceptance of the geologic conditions and other constraints at some finite scale, the conceptual model becomes the project's best-known site character. Applied geophysics aids the efficient and cost effective planning, phasing and prosecution of the Site Assessment's study and fieldwork.

The goal of applied geophysics should be to meet the desired Site Assessment's objective(s) during an early phase of each characterization component that it is intended to support. Objectives addressed by geophysical surveys include: the verification of geologic features or hazards, the in situ determination of engineering properties, the detection of hidden cultural features, and physical or chemical features for regulatory compliance. Geologic input, rock property estimates, geophysical modeling, interference effects, and budgetary constraints are co-determining factors for the applied geophysical method's selection. To reduce the impact of unexpected variations from the conceptual model, a moderate degree of geologic knowledge is necessary to determine the appropriate geophysical technique(s) to employ. Developing the geophysical hypotheses normally relies on some simplifying assumptions. There is no substitute for direct geologic or engineering or environmental data. Correlation of the geophysical model with available ground truth can be a laborious interpretative process, especially because iterations of both the geophysical models and the understood geology are usually required. The office interpretation of the data may continue to be processed until it coalesces into a self-consistent model with the observed and developed geologic data. The planning of a phased, sequential program with applied geophysics may provide the best site assessment at the lowest cost.

Greg's Résumé

Greg is a Geophysicist/Geological Engineer, consulting for URS Corporation's St. Louis Office. During his entire career, Greg has held only one title, Geophysicist. He specializes in all types of vibration mitigation from earthquakes, blasting and pile driving, and recommending appropriate geophysical studies for complex sites. His 40+-year career includes a long tenure at and retirement from, the St. Louis District, Corps of Engineers.

Greg has conducted business for all levels of government, federal, state and local. He had worked closely with consulting firms managing studies on federal projects. He now works in the private sector, but continues studies for federal and state offices. His duties have included: site assessment of dam sites, regional earthquake studies for federal dam sites, probabilistic and deterministic appraisal of potential earthquake impacts, varied geophysical studies for different projects' concerns (from archeological to environmental transport to groundwater to rock weaknesses), blast mitigation while effectively achieving the blasting goal, environmental mitigation, and the dreaded – "other duties, as assigned."

Greg received a B.S. in Geophysical Engineering from St. Louis University, a M.S. in Geo-Engineering from the University of Minnesota, Minneapolis-St. Paul, and a Ph.D. in Geological Engineering from the University of Missouri - Rolla (now Missouri University of Science & Technology). He is a Registered Professional Engineer in Missouri and Registered Professional Geologist in Arkansas and Missouri.

Greg has authored a variety of publications, which share the understanding of procedures instead of keeping proprietary control of methodologies. Greg has been an adjunct professor at all the engineering universities in the St. Louis area. He has taught Environmental Science classes and Geotechnical Engineering courses. His longest running class was offered once a year, "Seismology and Seismic Design" (CE 530A), Civil Engineering Department, Washington University of St. Louis, 1989 to 2004. Greg had taught at several Corps of Engineers' professional training courses.

Several causes have gained Greg's attention over the years. He has long been active with AEG (President, 1989-1990), and GSA's EEGD. He had a minor role in developing the administration of the Jahns' Lectureship. He is also active with several other professional organizations. Greg has been involved with the pursuit of several important public issues, including Geologists' Registration, public disaster preparedness, and building-code adoption. He has served on state commissions, and is presently serving on two Missouri State organizations.

Some of the accolades that Greg has received are: the Otto Nuttli Award from the St. Louis Section of the American Society of Civil Engineers, October 2011; a Professional (Honorary) Degree from Missouri University of Science & Technology, December 2010; award with the Army and Corps team for the Embrey Dam removal, May 2004; Johnston Service Award from AEG, October 2002; Achievement Medal for Civil Service, December 1998; and, 1991 Regional Outstanding Engineer from the Missouri River Region of the Society of American Military Engineers.

Gregory Hempen's Itinerary

If you can't make it to the meeting, you can still see the Jahns Lecturer as he speaks at colleges around the Carolinas.

Date	Time	Location	Talk Topic	Building	Room	Contact
3/26	1:00 PM— 2:00 PM	College of Charleston	YOU'RE GOING TO DRINK THAT WATER?!	TBD		Norm Levine
	9:00 AM — 10:00 AM	Guilford College	HELLO??? ARE YOU READY FOR THE BIG ONE?	Frank Family Science	Bryan Auditorium	Marlene McCauley
3/27	4:00 PM — 5:00 PM	UNC-Chapel Hill	YOU'RE GOING TO DRINK THAT WATER?!	Mitchel Hall	05	Melissa O. Hudley
	5:45 PM — 9:00 PM	Natty Greene's	WHAT'S MY LINE? SITE ASSESSMENT!			Madeline Ger- man
3/28	10:00 AM— 11:00 AM	Wake Technical Community College	HELLO??? ARE YOU READY FOR THE BIG ONE?	TE Building	112	Gretchen Miller
	2:00 PM— 3:00 PM	East Carolina University	WHAT'S MY LINE? SITE ASSESSMENT!	Graham Build- ing	309	Eric Horsman



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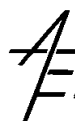
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LANDSLIDE MAPPING CONTINUES, ALBEIT ON A SMALLER SCALE

Reprinted with permission from Smokey Mountain Press



To Jenifer Bauer, the conditions couldn't be better for a hike. It's cold and soggy. There's no leaves left, nothing green at all on the forest floor save the rhododendrons and mountain laurels. Even the views are dreary and gray, leaving

nothing better to look at than the ground beneath her feet.

But that's what interests Bauer anyway.

A geologist who specializes in landslide sleuthing, Bauer will spend the winter months tromping through the Wayehutta Creek watershed of Jackson County, looking for the telltale signs of mudslides and slurries that came crashing down decades, centuries or even millenniums ago.

Landslides aren't like lightening. They can — and do — strike the same place twice.

Figuring out where past slides occurred is the best indicator of where future ones might happen. That's the premise of the landslide hazard mapping that Bauer's firm, Appalachian Landslide Consulting, is all about.

The firm has been hired to create maps of landslide prone slopes in parts of Haywood and Jackson counties.

But the work is a shadow of what the project once was: a bold mission to map landslide hot zones in every mountain county. State lawmakers axed the project in 2011, however, laying off a team of five state geologists mid-

stride. They had mapped high-risk landslide zones in four counties since the project's inception in 2006.

Now the work is continuing on a smaller scaled with private grant funding in the two mountain counties.

Macon County was among those completed, but work in Jackson County had barely begun and Haywood hadn't been started on yet.

The landslide mapping work was deemed too costly, but it was also disparaged by some in the real estate and building industry as a threat.

"It was becoming political in terms of, 'Holy cow, someone thinks they have beautiful mountainside property and there is a landslide hazard suddenly knocking,'" said Lynn Sprague, the director of the Southwestern N.C. Resources Conservation and Development Council.

But there was a groundswell of support to see the work continue — not just among environmental types but also emergency responders, land surveyors, county commissioners, and even some in the home building industry.

So Bauer and another geologist from the state's laid off landslide mapping team started their own firm and have picked up the torch — with the backing of privately raised grant funding.

The landslide hazard surveys take Bauer tramping over a lot of private property, but the team always get permission first.

"We knock on a lot of doors," Bauer said. "We usually only have two people who won't let us come on."

There's a mighty big carrot for landowners to agree, details of which are spelled out in a pamphlet that Bauer takes with her.

"This inventory will identify currently unstable areas that may be more likely to fail during heavy rain These will show where, during heavy rain events, landslides might start as well as the areas they might affect," the pamphlet explains.

(Continued on page 11)

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(Continued from page 10)

Mapping landslide hazard zones will alert people who live in these areas to take heed when there's heavy, prolonged bouts of rains. Jackson County tallied more than five dozen landslides during a week of heavy rain last winter.

"We hope to increase awareness of landslides in the county so they can be better prepared for when the next heavy rain event comes," Bauer said.

It will also give emergency responders a better idea of what they might be facing when responding to a landslide report, or even knowing where one is prone to hit, Sprague said.

"When they get called in, rocks are moving, trees are moving. Should they go over to that house?" Sprague said. "They need to know that if a road is undercut and they are doing an evacuation across it that it is not undercut to the point it will collapse."

A slippery slope

The landslide mapping work in Jackson County has the endorsement of the Jackson County planning board.

The support is symbolic — particularly amid a roll back of steep slope building rules in Jackson County. The planning board has nearly finished a cover-to-cover rewrite aimed at loosening constraints on mountainside construction.

The changes would allow denser development, more tree clearing, more intensive grading and bigger footprints of disturbance than the current rules. The changes call for less rigorous geotechnical, soil and environmental impact studies. And the changes would also up the threshold for when steep slope rules kick in — the rules will only apply to the steepest slopes and no longer the moderately steep ones.

The planning board is nearly finished with the rewrites, which have been in the works for more than a year. The changes will ultimately go to county commissioners for a

final decision this spring.

At first blush, it seems incongruous that the planning board would support landslide mapping on one hand yet push for weaker regulations when it comes to steep slope construction.

But in fact, it's a testament to what landslide mapping advocates have been saying all along: landslide mapping simply makes sense.

"[County planning board members] stated consistently as we looked at the steep slope ordinance that they would like the information to assist them and to use as a planning tool," said Jackson County Planner Gerald Green.

Despite claims by its supporters that landslide mapping is just handy information to have, some in the development and real estate industry have been skeptical. They fear areas flagged as "landslide prone" may come under restrictive building regulations or even be declared off limits. At the least, it could depress demand among potential buyers.

Landslide mapping advocates contend they have no ulterior motive to limit or restrict development on steep slopes. Instead, the goal is to make mountainside construction more compatible with the natural landscape and geography.

"We saw it as another bit of information to help developers make wise choices," said Eric Romaniszyn, director of Haywood Waterways Association, one of the primary advocates for the landslide mapping in Haywood. "There are a lot of different solutions out there, but it is just trying to get folks to think about it and not do things the way they always have."

When the enthusiasm for mountainside homes took off the 1990s, some developers buying up raw land for subdivisions plunked down house sites somewhat indiscriminately, with little forethought in how easy or hard it would be to actually carve out a building pad on any given lot.

"We want them to consider soils, slopes, streams, bedrock outcroppings, all the natural resources that go with any site, and consider them all when making choices of where to put a home site," Romaniszyn said.

The landslide hazard maps can clue builders in when a little more diligence is called for, Bauer agreed.

"They should be used to trigger a site specific investigation," Bauer said of the maps. "Use them as a tool to say, 'OK maybe I should hire a geotechnical engineer or geologist to designs walls on this specific portion of my property.'"

(Continued on page 12)

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Phase I ESA
Phase II ESA/UST
State Trust Fund
Geotechnical
Investigations

(Continued from page 11)

Granted, a wall won't stop a major landslide. But a properly built retaining wall guards against a landslide happening in the first place.

The majority of landslides originate on slopes that have been cleared, altered or excavated in some way, Bauer said.

"It takes much less rain to destabilize poorly constructed slopes," Bauer said.

Knowing a slope is in a landslide hazard zone could influence the builder to take precautions on an individual level, Bauer said.

How — or even whether — communities choose to use the information is up to them.

For now, the landslide mapping work in Jackson is only tackling the Wayehutta Creek watershed, the mountain-side that flanks Cullowhee to the east. Only \$10,000 in grant funding has been secured so far in Jackson. It is a drop in the bucket compared to the price tag of mapping the entire county.

The Haywood model

The landslide mapping initiated this year in Jackson County is following in the footsteps of a similar effort in Haywood that began a year earlier.

In Haywood County, the work has been much more extensive thanks to \$125,000 in private grant funding amassed by a coalition of environmental nonprofits.

Haywood has seen a rash of landslides in recent years. Several homes have been destroyed or destabilized. Dozens of private roads in subdivisions have washed out, leading to big repair bills for homeowners associations. This unfortunate reality made the landslide mapping project in Haywood an easy sell, garnering relatively broad support.

The grant funding raised in Haywood was enough to map the greater Waynesville and Maggie Valley area plus Jonathan Creek.

Bauer said the price tag might seem steep, but not when compared to the millions in property damage to homes and roads and property landslides have caused in the region.

"The average home cost in North Carolina is something like \$250,000. If we can save one home then that makes it worth the price of mapping the entire county," Bauer said. Advocates of the landslide mapping project encountered an unexpected hitch, however. There needed to be a pro-

ject manager, an agency or entity willing to coordinate and "own" the project at the local level.

While county leaders supported the work, they didn't want to be the ones to actually sanction it. The landslide maps turned into a bit of a hot potato.

Romaniszyn said it would defeat the purpose of sharing landslide hazard information with the public if the maps are sequestered or hidden in a hard to find place.

The Southwestern N.C. Resources Conservation and Development Council stepped up to the plate as a central repository for the maps.

"We feel like we can be neutral holders of the information. It is just like going to a public library, or just like an academic institution," said Lynn Sprague, the director of the RC&D Council, which was formally a federal entity but now operates as a nonprofit.

Still, when the maps for Haywood are completed in the spring, it's not clear how they will be publicized.

"We are working on figuring out the best way to distribute this information and make it available for use," Bauer said.



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THE PLUME*By Harry LeGrand*

A plume of contaminated ground water is conceived
 At the water table without any welcomed need.
 It may have an elongated trend,
 Finding where and when to end.

Wherever serious and massive wastes may loom
 The ground setting is right for a contaminant plume
 Abundant in areas of human sprawl
 Chances of potable water may fall.

An action that may lead to unintended consequence
 Should be considered without words to mince
 What could really go wrong?
 It's Murphy's Law and so long.

Can we merely wait and do nothing but debate
 While hoping that contaminants will attenuate
 At a waste site we know
 As the plume continues to grow?

No method of remedy or simple treatment is ideal
 Everyone wishes that the aquifer would heal
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GEORAMBLINGS*By Charles Welby*

One of the interesting things about writing these “words of wandering” is that one’s mind does not become “stale,” lost in the past, although past wanderings are an integral part of the ideas that flow out of the computer and into print. This month’s version or edition of “GEORAMBLINGS” began as I dreamed of what was passing below my feet as my airplane flew from RDU to Oakland with a connection in Oakland to Burbank on my way to check out the production of heavy, sulfur-bearing crude in the San Joaquin Valley a bit north of the LA Basin. As we approached the Oakland Airport, I could see the familiar topography of the north of San Francisco Bay, and eventually Treasure Island where they sold a lot of 1939 World’s Fair stuff. But striking in the view to the west from the plane was the Golden Gate with its bridge, Alcatraz Island, with its historic “boarding house” rising in the middle of the bay, and the profile of the Indian Maiden which is Mt Tamalpais.

During those many years ago, those attending the man-made island, Treasure Island (A bit of Engineering Geology here), could watch the passengers headed for places in the Pacific and eventually Hong Kong step down into the flying boat, otherwise known as the Pan American “China Clipper.” Judging from the observation area, the windows of the Clipper began a foot or so above the water level outside the airplane. Once “all aboard” and the hatches were closed, the flying boat taxied to near the Alameda Air Station in the East Bay, turned, cranked up its four engines and eventually broke water near Treasure Island. Its first stop was Pearl Harbor, eventually arriving in Hong Kong after stops at Wake Island, Guam, and the Philippines. As one watched the takeoff, one would see the San Francisco-Oakland Bay Bridge and turning one’s eyes westward could see the Clipper disappear over the Golden Gate Bridge which was a new feature, like the SF-Oakland Bay Bridge in the transportation system of the Bay Area.

The questions about the appropriateness of the geological conditions for the bridge were major questions. The authority from Stanford held one view and his counterpart at UC Berkeley held another view. And this controversy was not related to football contests nor who had the longest beard.

Turning to the matters of Environmental and Engineering Geology, one can ask what does the Pan American China Clipper have to do with Environmental and Engineering Geology? Well, think of aluminum ore mined and brought to the Columbia River area where the dams on that river generated the electricity to convert the ore to the

aluminum metal that was used in its wings and body; think of the crude petroleum that was brought to the Bay Area by pipe or tanker to be refined into aviation gasoline for its take off; think of other earth-derived materials that went into its construction.

Certainly not all geology is engineering or environmental geology, but when ore is mined, the works involved their design is in the broadest sense engineering; the construction of the dams to provide the electricity certainly require the understanding of the strengths and weaknesses of the rocks into which the dams are to be set. One can think of other similar examples of engineering geology.

In today’s culture we are more aware of the environmental aspects of those things that we construct and of the control that geologic factors place upon our use of the earth’s surface. Much of what we think of as Environmental Geology concerns the negative effects of our occupation of a particular place, whether it be the sea shore, a river flood plain, the results of a leaky gasoline tank the ground water contamination associated with some common dry cleaning establishment, the effects of aqueducts which carry water across dry areas to where the water is “best used” or thought to be most necessary without really thinking about the amount of the water that evaporates along its travel route.

Wandering back to the China Clipper, yes I had a model of the China Clipper at one point in my past; it “flew” as toys do in a child’s mind, and it did float as it was made of wood. It provided imaginary trips across the ocean to places known from the National Geographic and from the tales of acquaintances who had traveled by steam ship to some of them. So the China Clipper laid the foundation for wanderlust and curiosity about places still to be seen. And yes encountering on an almost daily basis rocks standing vertical or folded like so much plastic clay piqued imagination for places known and unknown.

QED

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.

Geological Hike at Falls Lake: AEG Carolinas Section Field Trip

By Sue Buchanan, Field Trip Chair



Phil Bradley (right) demonstrating the characteristic magnetism of the Falls Leucogneiss within the Raleigh Terrane.

What a great day for rocks and a hike through the woods! The Falls Lake field trip hosted by Edward (Skip) Stoddard, semi-retired NC Geological Survey and retired NC State University professor, Phil Bradley, Senior Piedmont Geologist for the NC Geological Survey, Tyler Clark, geology instructor at Wake Technical Community College, and Heather Hanna of the NC Geological Survey walked us through two 3-mile sections of the 60-mile Falls Lake Trail (part of the Mountains-to-Sea Trail of North Carolina). About 30 people attended this field trip. Those in attendance ranged from AEG and non-AEG professionals, students and spouses, parents, and children. This trip introduced the mobile application from Avenza to view GeoPDF maps of the online geologic trail guide mapped out by the field trip hosts. The online geologic maps were viewed on our mobile device, which allowed us to not only read the geologic guide but also track our GPS location along the trail.

Our day started at the Falls Lake Dam (Section 1) and the rocks within this section are more resistant to weathering and thus create steep valleys where we encountered rapids and waterfalls within the streams. The trail started within the very hard rock of the Raleigh Terrane Falls Leucogneiss, originally granite that was later metamorphosed due to local deformation. Hiking through the Falls Leucogneiss, we crossed over the Nutbush Creek Fault (right-lateral strike slip fault), which metamorphosed the local volcanic rocks and the effects of this fault can be seen across a zone several miles wide. Continuing past the

Nutbush Creek Fault are exposures of the felsic gneiss and schist of the Crabtree Terrane with smaller exposures of pegmatite. We ended Section 1 at the Falls Lake Thrust Fault.

From the end of Section 1, we drove onto Blue Jay Point County Park (start of Section 6) located within the Falls Lake Terrane. Here field trip attendees enjoyed a relaxing picnic lunch and the field trip hosts introduced us to the rocks of the Triassic Basin.

The afternoon hike started at the beginning of Section 13, in the Triassic Basin sedimentary rocks. Since these rocks are less resistant to erosion, the terrane was relatively flat with gently rolling hills. The sedimentary rocks consisted of reddish pebbly sandstone and conglomerate (or sedimentary breccia) with angular clasts of varying lithologies. At one stop we observed evidence of a debris flow by a single round cobble within an outcrop of coarse sandstone. Within the Triassic Basin are relatively north-south trending diabase dikes, and exposures of this rock type was observed on a small peninsula (seen from the trail across a small inlet) and as boulders along the trail. Near the end of Section 13, we saw boulders of diabase that were used as foundations for old homes.

AEG would like to thank Skip, Phil, Tyler and Heather for all their hard work in putting together an enjoyable and educational field trip. Field trip attendees have commented on how much they appreciated the efforts from the field trip hosts and the knowledge they provided about the local geology. Many attendees are very interested in going back to the Falls Lake Area to use the online geology guide and GeoPDF App when hiking other sections of the trail.



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Skip Stoddard (right) and Phil Bradley (left) describing a creek exposure of the Triassic Basin.



Ron Crowson (left) and Tyler Clark (right) examining sedimentary rocks of the Triassic Basin.



Tyler Clark (right) describing a Triassic Basin conglomerate outcrop.



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Project Manager

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**AEG CAROLINAS SECTION
BOARD MEETING MINUTES***By Susan Kelly, Section Secretary*

Roll Call 5:05PM – Alex Rutledge (Chair), Madeline German (Vice Chair), Briget Doyle (Treasurer), Susan Kelly (Secretary), Paul Weaver (Past Chair), Rick Kolb (Advisor), Adam Phillips (Social Committee Chair), Jen Thomas (Newsletter Editor), Sue Buchanan (Field Trip Chair)

All 5 members of the Carolinas Section Board of Directors were present – Quorum obtained

Briget provided the Carolinas Section Treasurer's Report
Currently in checking - \$9,335.30

Savings- \$11,679.94

Total Carolina's section – about \$21K (sponsorship and Vapor Intrusion Conference funds still coming in)

Discussion of the credit card machine (refer item 13):

Cost for use is not overly expensive, given current financial status.

Alex says he has received positive feedback regarding use of machine at meetings.

Potentially reevaluate use at the end of year to determine utility versus cost.

Bridget suggests an evaluation of the machine be included in the Treasurer's report.

Still waiting on transfer of funds from National for Field Trip and Vapor Intrusion Conference.

Section meeting in Raleigh next week (March 27th)

Maddie indicates 70 or 80 people expected to attend (30 have RSVP'd so far).

We will send out another announcement tomorrow (March 19th), requesting people RSVP by Monday (March 24th).

Pricing of Section meetings

Alex indicates he doesn't recall why the discounted fees were discontinued.

Paul indicates that the issue snowballed, and everyone began wanting a discount.

Rick recommends a \$15 discount (\$10 cost for meetings) for public sector employees and those currently unemployed.

Rick suggests the discount for regulatory employees (NCDENR) is a good way to get them to attend meetings, especially since they are not reimbursed for their registration fees like most private sector employees are.

Rick finds that having NCDENR employees at meetings provides good information exchange between private and public sector.

Alex suggests some people might have issue with

NCDENR employees getting a discount, as most are not AEG members.

The group decided that Rick should research why NCDENR employees don't typically attend section meetings, and determine what action would most likely attract their attendance.

Jahns Lecture tour

The schedule includes five universities in three days.

Alex will spend the day with Greg Hempen on Thursday (March 27th), as well as attend the Section meeting with him that evening.

Rick will drive Greg to Wake Tech and ECU on Friday (March 28th).

The schedule has not been added to the newsletter, but will be (refer to item 6)

Newsletter

Jen is going to try to send the newsletter out for review tomorrow (March 19th) and will include this meeting's minutes, as well as the Jahns Lecture Tour schedule.

Rick will get business cards advertisements from sponsors that have not yet been submitted.

A summary of the Falls Lake field trip will also be sent to Jen for inclusion in the newsletter.

Social Committee

Adam is looking at doing a social outing the same weekend as the Asheville field trip in September, and possibly doing a brewery tour.

The last social outing went well. Adam suggests there could have been even better attendance if the outing was advertised more in advance.

Rick suggests the new brewery in Cary (Fortnight Brewing) would be a good place to have a social outing event, as Cary is a central location.

Falls Lake field trip report

Thirty people attended Falls Lake field trip (four were hosts).

The field trip was definitely a success. Sue received several emails from attendees thanking her/AEG for hosting the trip and indicating that it was a great trip.

This was a "different" kind of field trip (i.e., not driving to multiple stops to look at geologic features) and hosts told a "story" as the group hiked along the trail.

They canceled the social planned for after the trip, as there weren't many people interested in attending, and those that had planned on attending indicated they were too tired after the trip.

The trip was a ~\$1,200 investment and the Section turned a small profit.

The next field trip is planned for Asheville. Rick Wooten (NCGS), Jenn Bauer, and other NCGS em-

(Continued on page 18)

(Continued from page 17)

ployees will host the trip. They plan on visiting two landslide locations. The trip will be on a Saturday and a bus will be chartered, as the locations to be visited don't have large pull outs.

Rick suggests that we make sure not to schedule the field trip too close to the CGS field trip, as that could impact attendance.

Sponsor renewals

Rick provided a status update:

26 sponsors last year and expect about the same this year.

12 so far this year (2 are new).

Sent sponsorship letters to 11 new companies.

Some sponsors paid through the National website, so those funds need to be transferred to the Section.

Membership renewals

Alex will reach out to our current Membership Chair to see if he continues to be interested in having this role, as it is an important role.

Alex received the membership roster from National in early March and it appears that there are a lot of memberships that have lapsed.

Alex might reach out to the rest of the board to contact those whose membership has lapsed to get them to renew.

Credit card payments

Alex suggests the Section get two card readers, especially if they are inexpensive.

Briget recalls that only one was initially purchased to see how well it would work.

Alex indicates that someone's credit card information can be manually input into the reader, so the card doesn't actually have to be swiped. Briget says that this possibly causes an extra fee to be charged.

Vapor Intrusion seminar

The seminar was extremely successful, both financially and as indicated by positive feedback from attendees.

230 attendees, many of whom inquired about AEG membership.

AEG President Gary Luce was in town and able to attend a portion of the seminar and indicated he was very impressed.

There is interest in repeating the seminar in two or three years.

We are working with National to close the books on the conference, so final numbers are currently not available. However, even conservative estimates indicate this event brought in more money than any other Section event ever has.

Having events such as this keeps the Section's funds in good shape.

There were some issues with getting funds paid to National transferred to the Section, as well as some other issues, and Paul suggests Alex discuss the issues with someone from National at the mid-year Board meeting in April. Alex indicates he will solicit a description of issues from Section members that he can take to the meeting.

Alex commends the planning committee on doing such a good job with the seminar.

Redox Tech conference

John Haslow from Redox Tech said that registration was lower this year and he thinks that having the Vapor Intrusion seminar in January is possibly what caused registration to be lower.

John indicated he would appreciate if the Section could take a more active role in planning the conference and the group agreed this was a good idea.

Rick indicated the conference was successful overall.

Rick suggested the Section consider having a one- or two-day conference like this every year. Rick indicated that the key to having successful conference registration is having energetic volunteers organize and advertise the event.

Rick currently has the Section booth and will put it up at the Southeast GSA meeting in Blacksburg, Virginia (April 10th and 11th). He will be manning the ASBOG booth, so Alex said he will see about getting someone else to man the AEG booth.

Museum donations

Checks have not been cut yet, as Briget had not determined where to allocate funds to the SC State Museum.

The SC State Museum has the following fund allocation choices: natural history; science and technology; science education expansion (focused on planetary education); and a general fund.

The group agrees the donation should go to the natural history fund.

Briget will send the \$200 donations to the NC Museum of Natural Science and the SC Museum of Natural History.

Rick inquires about sending in the fee for CLE accreditation for the NC Bar meeting.

Visiting Professionals

Rick indicates that six or seven Visiting Professionals meeting are planned for this year, including: NCSU, ECU, WCU, ETSU, Clemson, and Wake Tech

Rick indicated the Section pays for pizza and refreshments when the host school cannot (there was some confusion with Rick Wooten's visit at Clemson because it was not technically a Visiting Professionals meeting), but the group agreed to pay.

(Continued on page 19)

ANNOUNCEMENTS

Tami Idol Says Goodbye

Hello AEG friends,
I have accepted a geotechnical specialist position with Dominion Power in the mountains of Virginia and will be moving away from North Carolina. It has been a pleasure working with all of you for the past many years. I am so glad that the Carolinas Section of AEG has come so far. I am proud to have been a part of it. I will miss my geology family.

Tami V. Idol, EI
Former NC Assistant State Dam Safety Engineer
Division of Energy, Mineral, and Land Resources
Land Quality Section

New Southeast Regional Manager at Geobrug

Bob Lyne is Geobrug's new Regional Manager for the Southeast. He will be replacing Frank Amend handling sponsorship and advertising for Geobrug in the Carolinas Section newsletter.

(Continued from page 18)

Haiti well supplies

The Section has paid for expenses associated with shipping the well supplies in the past.

Dave Dunklee is getting costs for this year's shipment.

Well supplies are typically donated by Geologic Exploration, so the associated expense cost, which is a percentage of the well costs, should be minimal.

Mid-year Board meeting (April 25 – 27, Golden/Denver, CO)

Alex will be attending the meeting.

There will be workshops associated with a Needs Assessment, focusing on member benefits, etc.

Alex has been involved with Focus Area #3 (Value Proposition and Member Benefits), which will likely recommend:

Consolidate and eliminate several committees (many are inactive and they can be reinstituted if needed)

Eliminate several technical working groups

Focus more on communications (social media and branding, publications, website)

Continue focus on students

Focus more on meetings (everyone enjoys them, especially national meeting)

Focus Area #1: This Board meeting will likely result in long-lasting major changes to the National Board governance structure, while trying to maintain board diversity. These changes may include:

Separate the Section Chair and Board of Director Positions

Reduce the Board size from 30 to 11-17

Lengthen Board terms

Changes to Section boundaries

Alex indicated some variation of these changes will be made (they have been discussed for some time).

He solicited questions/concerns about the proposed changes so he can take them to the meeting.

Paul recommended a "sit-down" Section Board meeting, possibly for our next meeting, and Alex agreed, especially with the proposed changes at the National level that will likely be discussed at the mid-year national board meeting.

Paul indicated that CEUs are getting audited from the SC boards.



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April 9, 2014 - 1:00 PM

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CALENDAR OF EVENTS - 2014

Geological Events in the Carolinas

Courtesy of AEG Carolinas Section – www.aegcarolinas.org. Last updated January 5, 2014

Send updates/corrections to Rick Kolb, Duncklee & Dunham, rick.kolb1@gmail.com

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

Tuesday and Wednesday, March 25 and 26, 2014

Event: Science-Engineering-Technology Congressional Visit Days

More information: <http://setcvd.org/about-setcvd>

Location: Washington, D.C.

Contact: Rick Kolb, AEG Advocacy Committee, rick.kolb1@gmail.com

March 27, 2014

Event: AEG Carolinas Section spring meeting held jointly with ASCE Eastern Branch

Speaker: 2013-14 Jahns Lecturer Greg Hempen

Talk: What's My Line? Site Assessment! (AKA: Applying Geophysics in Site Assessment)

Location: Natty Greene's, 505 West Jones Street in Raleigh

Details: 5:30-7:00 social, 7:00-8:00 buffet dinner, 8:00-9:00 presentation

Contact/RSVP: Maddie German, madeline@smithgardnerinc.com

March 27, 2014

Event: Spring Meeting, Ground Water Professionals of North Carolina

Speaker: Walt Haven, P.G., Energy Program Supervisor, NCDENR Division of Energy, Mineral and Land Resources

Talk: Update on the Fracking Program in North Carolina

Location: Embassy Suites, 204 Centreport Drive in Greensboro

Details: 6:00 social, 7:00 dinner, 8:00 presentation

Contact/RSVP: Mike Stanforth, mstanforth@excelengr.com

March 28-April 12, 2014

Event: North Carolina Science Festival

Location: Events across the state

Details: www.ncsciencefestival.org

Tuesday, April 1, 2014 (meetings are held monthly on the first Tuesday of the month)

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; <http://rtpewb.com>

March 28-April 12, 2014

Event: North Carolina Science Festival

Location: Events across the state

Details: www.ncsciencefestival.org

April 9, 2014

Event: 18th Annual ASCE Eastern Branch Scholarship Golf Tournament

Location: River Ridge Golf Club

3224 Auburn Knightbridge Road
Raleigh, NC 27610

Details: www.ascenceb.com

April 10-11, 2014

Event: Southeastern Section, GSA 63rd Annual Meeting – Elevating Geosciences in the Southeastern U.S.: New Ideas about Old Terranes

Location: Inn and Conference Center, Virginia Tech; Blacksburg, Virginia

Details: <http://www.geosociety.org/sections/se/2014mtg/>

April 15, 2014

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, rick.kolb1@gmail.com

May 4-7 2014

Event: National Ground Water Association Summit 2014

More information: <http://www.groundwatersummit.org>

Location: Denver, Colorado

September 2014 (Dates TBD)

Event: Geosciences Congressional Visit Days

More information: <http://www.agiweb.org/gap/events/geocvd/>

Location: Washington, D.C.

(Continued on page 23)

(Continued from page 22)

Contact: Rick Kolb, AEG Advocacy Committee, rick.kolb1@gmail.com

September 21-27, 2014

Event: AEG Annual Meeting

Location: The Doubletree Scottsdale in Scottsdale, Arizona

Details: <http://www.aegweb.org/about-aeg/events/aeg-annual-meeting/2014-scottsdale>

Friday, October 10, 2014

Event: ASBOG Geology Exam

Location: McKimmon Center, NC State University, Raleigh

Contact: www.ncblg.org

October 19-22, 2014

Event: Geological Society of America Annual Meeting

Location: Vancouver, British Columbia, Canada

Information: <http://www.geosociety.org/meetings/2014/>



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Applicants for Member Class, including Full and New Members, 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, the applicant shall be practicing in the field of Engineering Geology, Environmental Geology or Hydrogeology.

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

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

Date of Birth:

Required to authorize payment

Preferred Address:

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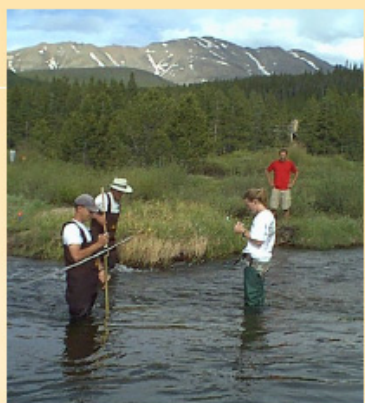
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The Carolinas Section of AEG supports many of its activities with financial assistance provided by our sponsors. Our activities include quarterly meetings, periodic field trips and seminars, a quarterly newsletter, and email announcements about our 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.

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Please complete the form below and mail to Jane Gill-Shaler, AEG Carolinas newsletter editor. Please call or email if you have any questions (contact information below).

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