



SPRING 2013

GEONews

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



SAVE THE DATE!

March 28, Raleigh, NC
James McCalpin,
2013 Jahns Lecturer

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GEONEWS SPRING 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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Cover: James McCalpin using LiDAR during field work in Alaska

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MESSAGE FROM THE CHAIR

*By Paul Weaver, PG,
Chair—AEG Carolinas Section*

The Carolinas Section held our winter meeting in Concord on January 31 at Dave & Buster's. We were very pleased to have around 65 people attend this meeting. AEG's 2013 president, Matt Morris, was the speaker and he gave a very informative talk on "The History and Progression of the Rock Slope Stabilization for Menoher Boulevard in Cambria County, Pennsylvania". It was great to see and talk to so many AEG members and potential members at the meeting.

Our spring meeting will be held at Sparian's Bowling Boutique and Bistro in Raleigh on March 28. Our speaker at this meeting will be the 2012/2013 Jahn's lecturer, Dr. Jim McCalpin. Dr. McCalpin's presentation will be on LiDAR geomorphology and its application to engineering geology. We hope to have another great turnout and successful meeting.

As many of you are aware, the chair of each section of AEG is also a member of the AEG national board of directors. As such, he represents our section at the mid-year board of director's meeting which is held each spring, and at the annual board of directors meeting which is held immediately following the AEG annual meeting each year. This year, the mid-year board meeting will be held in Denver, Colorado on May 18 and 19. Since this is my last year as Chair of the Carolinas Section, the meeting in Denver will be the last meeting in which I get to represent the Carolinas Section.


The AEG annual meeting will be held in Seattle, Washington on September 8 through 15 this year.

If you have never attended an AEG annual meeting, I strongly urge you to do whatever you can to attend the meeting this year. There is nothing like being able to spend part of a week conversing with colleagues from all over the country, going on field trips to see the geology of other parts of the country, and listening to presentations running the gambit of geological subjects. It's easy to register; just go to aegweb.org and follow the links for annual meeting registration.

The Carolinas Section has submitted a proposal to AEG National to host the 2019 AEG annual meeting in Asheville, North Carolina. Our preliminary proposal will be voted on at the mid-year board meeting in May in Denver. We believe that Asheville will be a great venue for the annual meeting and are looking forward to putting a team together to get the planning started. Assuming that our preliminary proposal is approved, I will start contacting people later this year in order to start forming the various committees necessary to plan and run the annual meeting. If you already know that you would be interested in assisting with the meeting planning, please let me know.

As always, I want to urge all of you to renew your AEG membership and if you aren't a member of AEG, to become one. I believe that AEG is a valuable organization for our members and for our profession as a whole. However, we can't continue our work without the income that comes from membership fees. Renewing or becoming a member is easy by going to aegweb.org and following the instructions. If you are a member, please talk to your colleagues and contacts in the industry about what they can gain by becoming a member of AEG. Also, if you are a member and would like to become more involved in the operations of the Carolinas Section,

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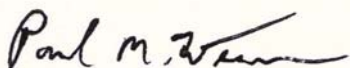
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please contact me...we always need energetic, enthusiastic volunteers to keep our section vital. Thank you all for your membership and support of the Carolinas Section. As always, please feel free to contact me at the email address listed below with 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
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AEG CAROLINAS SECTION 2Q TREASURER'S REPORT

By Dr. Briget Doyle, Section Treasurer



September 30, 2012 to
December 31, 2012

BALANCE As Of September 30, 2012

Checking Account	\$6,339.23
Savings Account	\$16,669.05
	\$23,008.28

INCOME

Dinner Meetings	
Natty Greene's in Greensboro	\$1,055.00
Sponsorships	
Ten Sponsors	\$2,933.50
Dues	
AEG National Dues Reimbursement	\$1,774.00
Interest	
Savings account	\$2.10
SUBTOTAL - INCOME	\$5,764.60

EXPENSES

Dinner Meetings	
Greensboro, Greenville, Concord	\$2,932.88
Educational Programs and Sponsorships	
Earth Science Kits and Shipping	\$3,395.00
NCSTA Outstand Teacher Awards	\$500.00
GSA Booth Fees	\$398.23
Officer Travel Expenses	\$513.32
Visiting professional talks	\$187.31
Shipping	
Ship AEG Booth to Denver, CO	\$235.32
SUBTOTAL - EXPENSES	\$8,162.06

BALANCE As Of December 31, 2012

Checking Account	\$3,939.67
Savings Account	\$16,671.15
TOTAL	\$20,610.82

JAHNS LECTURER JIM MCCALPIN TO VISIT THE CAROLINAS SECTION

by Rick Kolb



The Carolinas Section will host the Jahns Lecturer the March for the seventh straight year. The 2012-13 Jahns Lecturer is Jim McCalpin. Jim earned his BA in Geology from University of Texas ('72) and MS from University of Colorado ('75), specializing in geomorphology, Quaternary geology, and rock climbing. He did postgraduate work at University of Alaska, which led to employment in the Alaska Branch of USGS in 1976, and later the Branch of Western Environmental Geology (Menlo Park) in 1977, where he was first introduced to the "new field" of paleoseismology. In 1977 he imported these paleoseismic methods to Colorado and its Rio Grande rift, while mapping and trenching the Sangre de Cristo fault for his PhD at the Colorado School of Mines. After graduation he served as County Geolo

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gist for Jefferson County, Colorado in 1982, and then joined the faculty at Utah State University where he taught geomorphology and engineering geology from 1982-1991.

In 1991 he left academia and founded GEO-HAZ Consulting, devoted to applied geological consulting for geologic hazards, primarily seismic and landslide hazards. A related project was publication of the reference book Paleoseismology in 1996, in collaboration with many early US paleoseismologists. The book won the AEG Holdredge Award in 1999 and the GSA Burwell Award in 2000, and is now in its 2nd edition (in English, 2009; in Russian, 2012). In his 20+ years at GEO-HAZ, Dr. McCalpin has completed 140 geologic hazard projects in 40 countries, analyzing seismic and other hazards to developments ranging from residential subdivisions to ski areas, from dams to nuclear power plants. Since 2001 he has taught a summer field course in neotectonics and paleoseismology, using the only permanent paleoseismic teaching trench in North America. He enjoys collaborating with international earthquake scientists, and especially with their newer generation of students interested in geologic hazards and in geo-constraints to sustainability and quality of life.

Jim will present at Furman University and the University of North Carolina at Charlotte. Typically the Jahns Lecturer makes several presentations on his visit to the Carolinas. However, this trip was scheduled for the last week of March in partnership with the Southeastern Section, where Jim will be earlier that week. After scheduling his trip, three prospective hosting schools realized their schools are closed at the end of that week for Easter holidays. If you

cannot see his talk at the section meeting, the schools welcome your attendance at his presentations there. Here is Jim's agenda:

Wednesday, March 27:

Furman University: Lunch with students. Present to the department at 2:30 in the afternoon and to the university and community at 5:30 PM. Dinner with faculty.

Presentation in Plyer Hall

2:30 - LiDAR talk; 5:30 - Ski Slopes talk

Thursday, March 28:

University of North Carolina at Charlotte: Arrive around 10:00. Spend time with students/faculty until his presentation at 11:00, then to lunch with students/faculty, return to campus, depart Charlotte ~1:00 for Raleigh

Presentation in McEniry Hall

LiDAR talk

Thursday, March 28:

Spring Section Meeting in Raleigh
Sparian's, North Hills, 5:30-9:00 PM
LiDAR talk

The abstracts for these two talks are elsewhere in this newsletter.



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SPRING SECTION MEETING DETAILS:

Place: Sparian's Bowling Boutique, 141 Park at North Hills Street, Raleigh Raleigh, North Carolina

Date: Thursday, March 28, 2013

Time: 5:30 socializing begins/ cash bar;
7:00 dinner; 8:00 talk

Program: **"LiDAR Reveals the Bare Earth: LiDAR Geomorphology and its Applications to Engineering Geology"**

Cost: AEG members \$25, non-members \$30, students FREE with college ID; Teachers are \$10.

Reservations: Please make reservations with Rick Kolb

Email: rick.kolb1@gmail.com

LiDAR REVEALS THE BARE EARTH: LiDAR Geomorphology and its Applications to Engineering Geology

By James P. McCalpin

Bare-earth DEMs produced by LiDAR, with grid size of 1 m to 6 m, are an engineering geologist's dream-come-true. In the field of GEOLOGIC HAZARDS, the DEMs can be used to analyze: 1- active faults, 2- tsunamis, 3- landslides, 4- debris flows, 5- rockfalls, 6- floods, 7- sinkholes, 8- dams, and 9- coastal change. In the field of GEOLOGIC MAPPING, Lidar-based DEMs greatly increase the recognition of surficial and bedrock map units, and the accuracy of geologic contacts drawn. At scales of 1:24,000 and larger, these DEMs will revolutionize geologic mapping.

Using LiDAR, many unknown *active faults* have been discovered, both in forested and unforested areas. MATLAB and ArcGIS scripts have been written to automatically measure fault offsets of geomorphic features, with results comparable to field measurements. For *tsunami* hazard mapping accurate ground elevations are needed. *Landslide* inventories based on LiDAR have mapped 2 to 4 times more landslides than previously recognized on stereo airphotos. Oregon DOGAMI additionally assigns 18 geomorphic and geologic attributes to each mapped landslide, something difficult without LiDAR. LiDAR assists in identifying *debris-slide* source areas and *debrisflow* deposition zones. However, its real contribution is to increase the accuracy of debris-flow susceptibility maps, which rely heavily on accurate slope angles and slope curvatures to identify source zones. Similarly, *rockfall* trajectories are very sensitive to microtopography in the runout zone.

Predictions of runout distance, rockfall bounce heights, and velocities differ drastically between 10-20 m DEMs and 1-m LiDAR DEMs. Mapping of the 100-yr and 500-yr *flood* boundaries, and the water depths associated with them, can be accomplished from 1-m LiDAR without the need for extensive field surveying. *Sinkholes* are quite easy to spot on LiDAR imagery, even in forested areas and cleared fields. LiDAR mapping in Iowa identified 2.5 times more sinkholes in an area than an earlier NRCS study had mapped using stereo airphotos. LiDAR DEMs are particularly useful for multi-hazard assessments needed for critical facilities such as dams.

Geologic mapping at scales of 1:24,000 and larger, based on LiDAR, promises to be the "next generation" of geologic maps. Especially for surficial (Quaternary) geologic map units, and all map units in forested areas, LiDAR-based geologic maps will exceed the detail and accuracy of all previously published geologic maps. In addition, with Lidar's 1-2 m resolution, it can be enlarged to site scale (1:1200, 1:2400) and still remain useful. No longer will consultants make geologic maps of their sites by simply enlarging a tiny part of a 7.5' USGS geologic quad map, with its 20- to 40' contours that are decades old.

Despite all this promise, LiDAR is only a tool, like a rock hammer or a Brunton compass. It will show the your bare face of the Earth, but its up to you to interpret it. LiDAR's utility in any study depends on the experience of the investigator, particularly in geomorphology, Quaternary geology, and structural geology. If you are an expert in photogeologic mapping using stereopairs, then you already have all the skills needed to interpret LiDAR for mapping and hazard studies.

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As in many endeavors in life, what you get out of it depends on what you bring to it.

The talk ends with an interactive demo of 1-m and 3-m LiDAR from Colorado, featuring alluvial fans, active faults, landslides, and how to optimize their appearance by changing the DEM visualization parameters (sun azimuth, sun elevation, ambient light, vertical exaggeration, etc.)

SKI AREAS AND THEIR SLOPE STABILITY PROBLEMS:

The Colorado Story

By James P. McCalpin

Most ski areas lie on land leased from the US Forest Service, so proposals for new trails, roads, or snowmaking trigger an EA or EIS, and thus involve a geologist. In recent years the “fatal flaw” of a proposal (as seen by the USFS or opposition groups) is often the anticipated destabilizing effects of tree clearing and snowmaking on quasi-stable hillslopes. An added complication is the fact that most Colorado ski areas lie on ancient landslide terrain, because the lower sideslopes of normal glaciated valleys are too steep for skiing. Only where post-glacial landsliding has “knocked down” the U-shaped valley wall, can beginner skiers get down the mountain to the base area on the valley floor, without killing themselves.

The conventional wisdom in forest sciences is that clearcuts on steep slopes cause landslides, by decreasing material strength (via killing tree roots), and increasing available moisture (by eliminating forest transpiration). Ski trails are basically permanent clearcuts, never allowed to regrow. In addition, almost all ski areas apply artificial snow to trails early in the season (typically 18” of wet snow), which adds to the natural snow that falls later in the season. Given the heritage of postglacial landsliding, it is rather surprising that there haven’t been more new and reactivated slope failures in developed ski areas in the past 50 years. Two contributing factors may be: (1) the deep grading of ski trails in the 1960s and 70s, which removed much of the slope colluvium down to bedrock, and (2) the protective effect of the compacted artificial snow layer, which prevents spring snowmelt infiltration into the ski trail.

As a result, careful mapping of historic and prehistoric landslides is necessary before remediation measures can be designed. Normally ski areas are not willing spend much money studying slope failures, and some failures may never even be reported to the Forest Service, resulting in an incomplete history. The Forest Service has very few engineering geologists who could review a proper slope stability study. As a result, the standard of care in EA/EIS studies is far below that for residential and commercial developments. For two decades the author has been trying to persuade a ski area to perform a proper slope stability investigation prior to development, so that a quantitative calibration study could be made of the before- and after-development conditions.

In the five ski area Case Histories presented in this talk, slope stability concerns have been critical.

- Aspen Highlands, 1994; client wanted to place a restaurant complex in topographic depressions at the summit, but they turned out to be sackungs.

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

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- Aspen Mountain, 1996; debris flow initiated on Aspen Mountain and damaged Aspen Music School at base of mountain.
- Keystone, 1997; Ski Tip and Saints John lift lines revised to avoid landslides.
- Powderhorn, 2000; spring landslides moved lift towers on both active lifts.
- Crested Butte, 2007-2010; Snodgrass Mountain expansion, where finally a proper slope stability study was performed prior to development.

The lesson is that every ski area has unique slope stability problems, dictated by its stratigraphy, topography, and structure. However, there are some common factors:

- reactivation of prehistoric landslide deposits
- cutting trails on oversteepened glacial valley side-walls, that are at the threshold of slope stability
- debris slides/flows caused by dumping ditch run-off onto steep slopes that have never carried concentrated surface flow

GEORAMBLINGS: Some Observations on Water

By Dr. Charles W. Welby,
Former AEG Carolinas Section Chair

Water can be viewed as both a commodity and at the same time as a need for life. This idea is especially featured in the book, *DAM NATION* BY Stephen Grace (2012). The book provides interesting comments and a summary of the development of water supplies for the nation's needs in the West. Construction of some of the dams was important news stories during my childhood, and others were of interest in later times. A visit to the construction site of the concrete gravity Friant Dam on the San Joaquin River in California (completed in 1942) led to some experiments in my father's flower bed.

One cannot in a short article provide a true adequate summary of a complex matter, but here I hope to alert readers to some of the history of the development of "tools" for handling supplies of water in the West and to lay some foundation for thinking about how we manage water in the eastern half of the U.S. for the "good of the people." I suppose that one should visualize a variety of models made in a childhood sandbox into which we have been able to introduce water for a little fun.

Stephen Grace's book describes well the "water wars" of the western U.S. and a period of dam construction there in which the dams were built to provide water to desert and subdesert areas. Most of the book focuses on the legal political and environmental aspects of use of the Colorado River water, Southern California's insatiable thirst, construction of dams to bring water from long distances to irrigate desert areas at essentially no cost to the agricultural interests.

Not touched upon in any great detail in the discussions are the geologic aspects related to the construction of the dams and the canals used to accumulate the water and then distribute it. However, in the case of Boulder Dam (now Hoover Dam) the nature of the rock that had to be removed to construct the abutments and the tunnels associated with the dam's design are recognized as important as health hazards. Lack of the requirement for hard hats in the construction area along with dust

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prevention or breathing apparatus around the dust are important in considering the casualties during the construction of the dam and life long respiratory illnesses.

As the story of the period of dam construction unfolds, Grace quotes John Wesley Powell: "Facts are to be collected as preliminary to construction of a reservoir system. To neglect the essential facts is to be guilty of criminal neglect." Although data were collected for the construction of each dam, in hindsight it seems that adequate geologic knowledge was in many cases not collected, or that which was collected was ignored. In fact as the dam construction story unfolds, the neglect in the political process to force the collection of necessary facts makes dam construction in several cases actually dangerous and leads to dam failure.

One case is the failure of the St. Francis Dam in Southern California on March 12, 1928. The dam was constructed in the midst of a major political battle over its construction and need. Another example is the Teton Dam failure. In 1972 the USGS questioned the appropriateness of the location for a dam in the location chosen because of the fissured ash flows and lava at the site. The basic question that had to be addressed was, "Can the fissures be filled with enough concrete to prevent water reaching the interior of the dam and causing it to fail?" History tells us "NO!" as of June 1976.

Professor Henry Petroski of Duke University has noted in one of his publications that in the engineering world we learn by failures. And such a statement certainly applies to geological interpretations of places where we place dams and other structures or earth surface modifications. Certainly during the dam building period in the West there have been many failures and problems from which we have "learned."

As a closing note in "georambling" I recall that some of what we now know as "Engineering Geology" was developed in conjunction with the development of the dams constructed by the Tennessee Valley Authority (TVA). One of the founders of this practice was W. J. Mead, eventually a long time Head of the then Geology Department at M.I.T. But that is another chapter in the history of the development of Engineering Geology as a field of study and practice.

And as a closing question, "What is the most precious liquid in man's occupation of the earth?"

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.

AEG NEEDS ASSESSMENT: Your Survey is on its Way *By Duane Kreuger*

As you have read recently in other AEG communications, the AEG member Needs Assessment process is well underway. Our partners at The Loyalty Research Center (LRC) have completed their Investigative Phase, which involved interviews with over 40 stakeholders. Now we need your help. You will be receiving an email pre-notification from our partners at The LRC in the next several weeks that will describe the survey process and what they will be requesting you to do. After that, you will receive an email with a link to the web-based survey portal. We anticipate that you will be able complete the survey in around 15 minutes. Use this as an opportunity to tell AEG what you need from your professional organization. Now is your chance to really make a difference!

(Continued on page 12)



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EDUCATION SECTION

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The Loyalty Research Center will kick off the first batch of electronic surveys around the beginning of March. We have five target groups of people, or target markets, which we identified as being critical to the Needs Assessment data gathering process. These groups include Professional Members, Student Members, Lapsed Members, Prospective Members and Commercial Entities. The LRC will be conducting the surveys of each of the 5 target groups in overlapping waves, so some of you will be notified sooner than others.

We have made every effort to be as thorough as we can through the entire Needs Assessment process, and The LRC will be sending over 13,000 emails and hopefully collecting data from the over 6,500 survey participants. We don't like to make mistakes, but if we somehow miss you on an email survey notice, by all means, let us know. Our aggressive schedule indicates that all the surveys will have been launched by about March 7th. Everyone's input is not only solicited but valued.

We ask that you please participate when you are called upon to do so, and feel free to contact either of the Needs Assessment Team leaders, Deb Green (tilgreen@aol.com) or Duane Kreuger (d_kreuger@geotechnology.com) with any questions or suggestions.

STUDENT OUTREACH

By Jennifer B. Thomas, AEG Carolinas Co-Editor

The Carolinas section continues to prioritize outreach to students and colleges. A large quantity of student applications has been received for the first portion of the ASBOG exam. AEG members including Rick Kolb, AEG Carolinas Student Liaison are planning speaking trips to Virginia Tech and Concord in West Virginia as well as more local schools.



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EDUCATION SECTION

AEG STUDENT MEMBERS REQUESTED TO HELP WITH SCHOLARSHIP FUNDRAISING

By Jane Gill-Shaler, AEG Carolinas Editor

For the last three years AEG member and co-editor of AEG GeoNews Jane Gill-Shaler, a North Carolina geologist, has been designing and creating “geology quilts,” which are raffled off at the annual AEG meetings in order to raise funds for AEG Scholarships through the AEG Foundation. The designs feature areas of interest where the meetings are held. Our next AEG Annual Meeting will be in Seattle WA from September 8-15, 2013. Jane has designed the quilt, but will need a few willing hands to help with the construction. Both men and women are welcome to help. The parts are broken down into about 12” by 12” squares, with all the materials and instructions included in each packet. The last quilt, “The Geology of Utah,” brought in thousands of dollars for AEG Scholarships through the AEG Foundation. Other previous quilts featured the Great 1886 Earthquake of Charleston SC, and the 1964 Tsunami in Alaska. The Mt. Rainier quilt will be the fourth in the series.

It is interesting to find that in doing the squares, you find out something about geology in another area of this beautiful country that you may not have known before. The next design will feature Mt Rainier, a strato-volcano within sight of Seattle. The colors are the soft greys and

whites of this beautiful mountain, with a surprise splash of color to indicate the next eruption!

For more details, or to pick up a packet, please contact Jane Gill-Shaler at janehgillshaler@gmail.com, or at the next AEG meeting.



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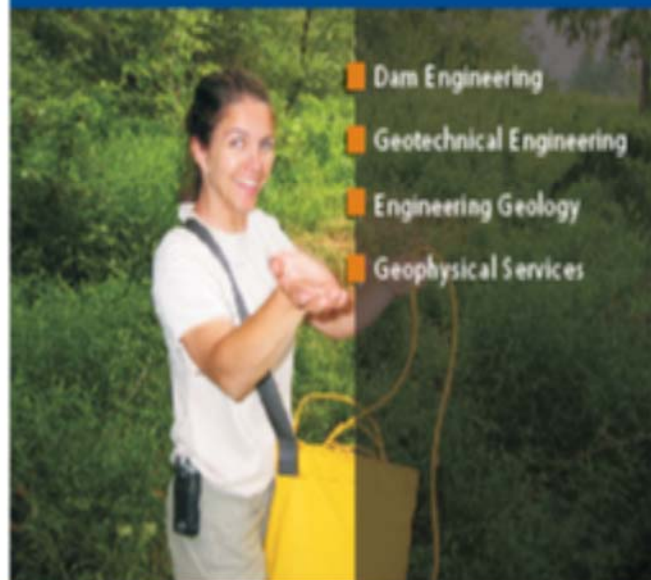
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Enviro-Equipment, Inc. (EEI) is pleased to announce the construction of another Aggressive Fluid Vapor Recovery (AFVR) Trailer, also referred to as Dual Phase Extraction (DPE) and Mobile Multi-Phase Extraction (MMPE). While we have sold AFVR Trailers to clients in the past, we now plan to stock AFVR Trailer units for rental or subcontracting. Clients have the option for as little or as much assistance from EEI as they require. Options range from renting and operating the system yourself to subcontracting EEI to do your entire AFVR event.

Key Features of our AFVR Trailers include:

- Dekker Oil Sealed Liquid Ring 300 SCFM @ 25"HG
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- Manifold allows pumping from KO Tank to Storage Tank AND Pumping From Storage Tank through Totalizing Flow Meter to discharge point simply by adjusting valves
- Vapor Phase Carbon Drum for Off Gas Treatment
- Ultra Silent Diesel Generator, 230volt 3 Phase, Push Start, Auxiliary 115 and 230V Outlets
- Galvanized Steel Inlet Manifold, 3" Header, (7) 2" Zones with Ball Valve and Vacuum Gauge
- Multiple Sampling Ports
- UL Listed Control Panel

EEI also carries all of the necessary accessories for AFVR events including "tanker truck" cam lock hoses, vapor phase granulated activated carbon media, thermo anemometers, photoionization detectors (PID), flame ionization detectors (FID), well head assemblies and stinger piping.

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ANNOUNCEMENTS

2013 AEG Shlemon Conference, Dam Foundation Failures and Incidents, Denver, Colorado

The next Shlemon Specialty Conference will be held in Denver Colorado May 16-17, 2013. The focus of the conference will be a detailed review of select dam failures and incidents to provide a “lessons learned” to practicing engineering geologists. Several classic dam foundation failure and incident case histories (i.e. Teton, St. Francis, and others) will be studied in-depth along with case histories that are lesser known but just as significant. The conference will be taught by recognized experts from the United States Army Corps of Engineers, United States Bureau of Reclamation, academia and private consultants. Registration information will be available by September, 2012. For additional information please contact Edwin Friend. The flyer, with complete information is on page 17.

The 7th GEOTECHNICAL, GEOPHYSICAL, AND GEOENVIRONMENTAL TECHNOLOGY TRANSFER CONFERENCE AND EXPO (Geo3T2)

The conference will be held April 4–5, 2013, and is hosted by NCDOT Geotechnical Engineering Unit. This conference is self-sustained; all authors must complete registration to attend the conference. For more details please visit the conference website at <http://www.ncdot.gov/~geo3t2> If you have any questions please contact: Conference Contact: geo2t2@ncdot.gov, or Chris Chen (P: 919-707-6863, chen@ncdot.gov), or Scott Hidden (P: 919-707-6856, shidden@ncdot.gov) Address: NCDOT Geotechnical Engineering Unit 1020 Birch Ridge Drive, Raleigh, NC 27610. The flyer with complete information is on page 21.

Geotech Annual Field Days and Golf Tournament

This June 20 and 21, 2013, Geotech presents the 5th Annual Geotech Field Days event. The event includes equipment demonstrations and hands-on training on a wide variety of Geotech’s instruments plus food, drink, and networking. Instrument manufacturers and national service providers will be in attendance. Geotech will also be holding its 13th Annual Charity Golf Tournament on Saturday, June 22, 2013 to benefit Ronald McDonald House. This year’s tournament will be played at West Woods Golf Course in Arvada, Colorado. For additional information contact Geotech at 1-800-833-7958 or sales@geotechenv.com. Information is also available on the website: http://www.geotechenv.com/field_days.html

The North Carolina Science Festival.

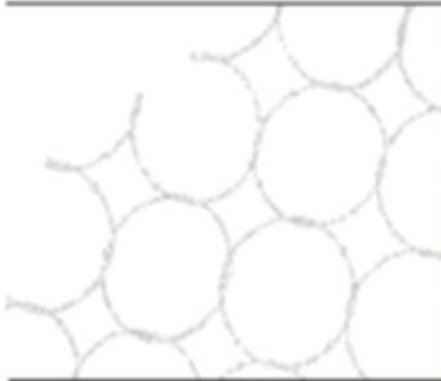
The Raleigh News & Observer is proud to expand our partnership with an amazing and unique statewide event - The NC Science Festival. Emanating from the Morehead Planetarium in Chapel Hill, the Science Festival takes place at dozens of locations from Nantahala to Nags Head. Over 170,000 guests attend events over an exciting two-week period from April 5th through April 21st. The Festival strives to raise awareness among the young, the old and everyone in between about the importance of science, both in the classroom and in everyday life and as an economic engine. For more information on the Festival, visit the website at www.ncsciencefestival.org.



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Conference Themes

The Geo³T² Conference will include several sessions for presentation and discussion of papers covering various geotechnical topics. However, the focal points will be recent advances and technology transfer in the following areas.

- Subsurface Exploration
- LRFD Design Issues
- Nondestructive Testing of Deep Foundations
- Shallow & Deep Foundations
- Soil Improvement
- Reinforced Slopes / Rock Slopes
- Slope Stabilization
- Retaining Walls
- Geophysical Engineering
- Geoenvironmental Engineering



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Geotechnical, Geophysical, Geoenvironmental Engineering Technology Transfer Conference & Expo



Conference Host Agency

North Carolina Department of Transportation
Geotechnical Engineering Unit

1020 Birch Ridge Drive, Raleigh, NC 27610
Phone: (919) 707-6850 Fax: (919) 250-4237

Conference Email: geo3t2@ncdot.gov
Direct Contact: Chris Chen (P: 919-707-6863)
Scott Hadden (P: 919-707-6856)

Conference Website: www.ncdot.gov/~geo3t2/
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- Explore New Technology
- Share Knowledge with Others
- Affordable

The Geotechnical Engineering Unit of the North Carolina Department of Transportation is pleased to host The 7th Geo³T² Conference and Expo on April 4-5, 2013 in Cary, NC.

The conference will explore the challenges and advances in Geotechnical, Geophysical, and Geoenvironmental Engineering Technology Transfer.

The Geotechnical field is increasingly becoming complex and constantly changing. This conference aims to bring together designers, practitioners and research professionals involved in current geotechnical problems and technologies.

Conference Location

Embassy Suites Hotel

Raleigh - Durham / Research Triangle

201 Harrison Oaks Blvd., Cary, NC 27513

Phone: 800-EMBASSY or 919-459-1515

Visit [Conference Website](http://ConferenceWebsite.com) to book online.

A limited block of rooms with reduced rate of \$119.00 per night (plus tax) have been reserved for conference attendees. The reduced room rate is available until March 4, 2013 by indicating "NCDOT Geo3T2 Conference." After that date please contact Ms. Kiella Molden by phone at 919-459-1510 or email at Kiella.Molden@JQH.com for availability of the rate.

CALENDAR OF EVENTS - 2013

Geological Events in the Carolinas

Courtesy of AEG Carolinas Section – www.aegcarolinas.org. Last updated March 19, 2013

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

Date: Wednesday, March 27, 2013

Event: Presentation by 2012-13 Jahns Lecturer Jim McCalpin, “LiDAR Reveals the Bare Earth: LiDAR Geomorphology and its Applications to Engineering Geology”

Location: 2:30 PM, Room TBA, Plyler Hall, Furman University; Greenville, South Carolina

Contact: Suresh Muthukrishnan, suresh.muthukrishnan@gmail.com

Date: Wednesday, March 27, 2013

Event: Presentation by 2012-13 Jahns Lecturer Jim McCalpin, “Ski Areas and Their Slope Stability Problems: The Colorado Story”

Location: 5:30 PM, Room TBA, Plyler Hall, Furman University; Greenville, South Carolina

Contact: Suresh Muthukrishnan, suresh.muthukrishnan@gmail.com

Date: Thursday, March 28, 2013

Event: Presentation by 2012-13 Jahns Lecturer Jim McCalpin, “LiDAR Reveals the Bare Earth: LiDAR Geomorphology and its Applications to Engineering Geology”

Location: 11:00 APM, Room 124, McEniry Hall, University of North Carolina at Charlotte

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

Date: Thursday, March 28, 2013

Event: AEG Carolinas Section Spring Meeting

Speaker: Presentation by 2012-13 Jahns Lectur-

er Jim McCalpin, “LiDAR Reveals the Bare Earth: LiDAR Geomorphology and its Applications to Engineering Geology”

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

Contact: Rick Kolb, rick.kolb1@gmail.com

Date: Tuesday, April 2, 2013 (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>

Date: Thursday, April 4, 2013

Event: Visiting Professionals Presentation at UNC-Charlotte

Location: 5:00-6:30, Room 124, McEniry Hall, UNC-Charlotte

Contact: Rick Kolb, rick.kolb1@gmail.com

Date: April 4 and 5, 2013

Event: 7th Geotechnical, Geophysical, and Geoenvironmental Technology Transfer Conference and Expo

Time: 8:00 AM Thursday until 12:30 PM Friday

(Continued on page 21)



Scott Pearce
Vice President

P.O. Box 484
High Point, NC 27261
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F: 336.434.7752
C: 336.803.1783
spearce@adenviro.com
www.adenviro.com

(Continued from page 20)

Location: Embassy Suites Hotel, 201 Harrison Oaks Blvd., Cary, NC
Details: www.ncdot.gov/~geo3t2

Date: April 5-21, 2013

Event: North Carolina Science Festival
Location: Events across the state
Details: www.ncsciencefestival.org

Date: April 17, 2013

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

Date: Tuesday, May 2, 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; <http://rtpewb.com>

Date: May 16-17, 2013

Event: AEG Shlemon Conference, Dam Foundation Failures and Incidents
Location: Denver, Colorado
Contact: Edwin Friend, efriend@rjhconsultants.com

Date: Tuesday, June 4, 2013

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>

Date: September 2013

Event: 6th Annual Geosciences Congressional Visit Days
More information: <http://www.agiweb.org/gap/events/geocvd/index.html>
Location: Washington, D.C.
Contact: Rick Kolb, Advocacy Committee Chairman, rick.kolb1@gmail.com

Date: September 8-15, 2013

Event: AEG Annual Meeting
Location: The Westin Hotel; Seattle, Washington

Date: October 27-30, 2013

Event: Geological Society of America Annual Meeting
Location: Denver, Colorado
Information: www.geosociety.org/meetings/2013/about.htm



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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 = \$140.00. 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 = \$110.00 (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: _____

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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 \$_____

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Phone: 303-737-2926 FAX: 303-737-2967/20-230-43469 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.

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 two meetings. 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.

Platinum Sponsor (\$500):

GeoNews Newsletter: Half-page ad (4-1/2" high x 7" 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 Exhibit: Space for tabletop display at three meetings. 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.

Platinum PLUS Sponsor (\$600):

Same as Platinum, but with a FULL PAGE ad in GeoNews. Limited to 2 Sponsors per 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).

AEG Carolinas Section Sponsorship Form

Please begin our sponsorship of the Carolinas Section of the Association of Engineering Geologists. Our sponsorship level is:

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(Modified 12/17/2011)

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Thank You, AEG Carolinas Sponsors!!

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