

GeoNews

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

2009, 2011, 2013, 2016, and 2017 AEG Chapter of the Year

FALL 2019



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SAVE THE DATE

Remediation Short Course
Grandover Resort - Greensboro, NC
November 13, 2019

GWPNC PFAS and Other EC Workshop
JC Raulston Arboretum—Raleigh, NC
December 3, 2019

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Thanks to our Sponsors!

GeoNews is a publication of the Carolinas Chapter 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 AE 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 Sept 1, issue date Sept 21

Winter—deadline Dec 1, issue date Dec 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

AEG Carolinas Chapter**Current Officers and Contacts**

Chair Susan Avritt, P.E., L.G.
susan.avritt@woodplc.com

Vice Chair Jacob Hundl
geotex02@gmail.com

Treasurer Walt Plekan, P.G.
Walt.plekan@aecom.com

Secretary Jennifer B. Thomas, P.G.
jen@jennotecllc.com

Membership Chair Rebecca Deal
RDeal@harthickman.com

Regional Director/Student Liaison Rick Kolb, P.G.
Rick.kolb1@gmail.com

Social Media Co-Chairs Joanna Harbison
joanna.harbison@yahoo.com

Rohit Warriar
rwarrior@geosyntec.com

Social Committee Chair Adam Phillips
aphillips@prismlabs.com

Field Trip Chair Rohit Warriar
rwarrior@geosyntec.com

Chapter Sponsor Co-Chairs Eric Cross, P.G.
eric@pyramidenvironmental.com

GeoNews Editor Joshua Hanks, P.G.
joshmhanks@gmail.com

Advisor Jennifer Bauer, P.G.
jennbbauer@gmail.com

Advisor Gary Rogers, P.G.
grogers@schnabel-eng.com

Advisor Paul Weaver, P.G.
pweaver@espassociates.com

Past Chair Maddie German, P.G.
Maddie.german45@gmail.com

AEG Carolinas Chapter Website www.aegcarolinas.org

AEG National Website www.aegweb.org

Cover: (Rohit Warriar) Professor Shew discussing the installation of the rock-filled terminal groin on South Beach.

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MESSAGE FROM THE CHAIR

By Susan Avritt, P.E., P.G., Carolinas Chapter Chair

Greetings Carolinas Chapter!

Many of you, including myself, attended the AEG National Annual Meeting that was held in Asheville from September 17 to 22, 2019. The planning committee did an outstanding job planning this very successful meeting. They budgeted for about 350 people to attend, and, at last count, had about 515 people registered! The planning committee was comprised of 14 Carolinas Chapter members, co-chaired by Paul Weaver and Briget Doyle. Congratulations to the 62nd Annual Meeting planning committee! Paul Weaver will be providing a summary of the meeting in the December issue of *AEG News* so be on the lookout for Paul's article.

At the Annual Meeting, our own Rick Kolb received the Floyd T. Johnston Service Award! This prestigious award is presented to a member for outstanding and faithful service to AEG over a minimum period of nine years.

On behalf of our Carolinas Chapter, I would like to congratulate Rick and thank him for his tireless work for our Chapter and AEG overall. If you happen to see Rick in the coming months, please extend your congratulations to him as well.

In August, we applied for AEG's Outstanding Chapter award. This award was established by the Board of Directors in 2001 to honor a Chapter of the Association judged to excel in a number of areas including professional activities, communications, and membership. Although we didn't win this year, we were commended for our continued excellence. The Carolinas Chapter has been awarded the Outstanding Chapter five times since inception of the award!

The Carolinas Chapter supports the North Carolina Science Teachers Association (NCSTA). This year we will have a booth at the NCSTA's annual Professional Development Institute conference in Winston-Salem on November 14th and 15th. We will pass out American Geosciences Institute (AGI) Earth Science Toolkits to teachers in attendance (for free!). If you are interested in volunteering for this event, please let me know.

Thanks to those of you who participated in our elections. Your board for the 2019-2020 year will be Susan Avritt (Chair); Jacob Hundl (Vice-Chair), Walt Plekan (Treasurer), Jen Thomas (Secretary).

(Continued on Page 4)



(Continued from Page 3)

We are privileged to serve the membership. Please contact us with ideas and suggestions to help us on our ongoing mission to make the Carolinas Chapter even better.

If you are interested in becoming more involved with the AEG leadership, the focus groups, or AEG in general, please contact me or other members of the Carolinas Board. We are in need people to help fill supporting chapter roles. Professionals, regulators, teachers and students are all encouraged and welcome.

It is that time of year to renew your AEG membership. If you renew now, your membership will be good through the end of 2020. As North Carolina licensed geologists we are required to earn contin-

AEG presents opportunities at quarterly dinner meetings, classes, conferences and field trips to earn some of these credits, all of which are pre-approved by the NC licensing board.

As always, your board and I look forward to hearing from each of you regarding your suggestions and/or concerns related to our Chapter. We are here to serve the needs of our membership, so your feedback is vital and welcome.

Susan Avritt, P.E., P.G.

Susan.avritt@woodplc.com

AEG Carolinas Chapter Chair



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AEG Carolinas Chapter Updated 3Q 2019 Treasurer's Report

By Walt Plekan, P.G., Carolinas Chapter Treasurer



AEG Carolinas Section Treasurer's Report June 19, 2019 through September 30, 2019

BALANCE As Of June 19, 2019

Checking Account	\$ 8,954.67
Savings Account	\$ 18,605.28
	\$27,559.95

INCOME

Meetings \$0.00

Misc

Member Fees \$170.00

Interest

Interest from savings 3.29

SUBTOTAL - INCOME \$173.29

EXPENSES

Fees

Meeting Expenses

June Meeting \$1,787.66

Additional Expenses \$0.00

SUBTOTAL - EXPENSES \$1,787.66

BALANCE As Of September 30, 2019

Checking Account	\$ 4,337.01
Savings Account	\$ 21,608.57

TOTAL \$25,945.58

AEG Carolinas Field Trip Summary

Geology/Geohydrology, Geologic Processes, and Natural Communities:

Smith Island Complex

By Rohit Warriar, P.G.

The AEG Carolinas Chapter co-hosted the 2019 summer field trip to beautiful Bald Head Island (BHI) along with UNC-Wilmington (UNCW) and the Bald Head Island Conservancy. Participants on the field trip earned 4 hours of continuing education credits. All of AEG's field trips and chapter meetings are pre-approved for continuing-education credits by the NCBLG.

The field trip began on a balmy Saturday in June with AEG members and their families taking a chartered bus from UNC Wilmington to the BHI Ferry terminal. Members met with field trip leaders Professors Roger Shew and Peter Zamora with the University of North Carolina at Wilmington and took a picturesque 30-minute ferry ride to BHI. Since no vehicles are allowed on the island, members hopped on rented golf carts and zipped their way to the first of four stops with our field trip leaders.



Professor Shew discussing the evolution of the Smith island Complex.



Members disembarking from their golf carts at South Beach

The first stop was on South Beach, a short 10-minute golf-cart ride from the Ferry terminal. Professor Shew provided members with a pictorial overview of the evolution and depositional history of the Smith Island Complex, stratigraphy and ongoing research activities of this Complex. Members took a walk with Professor Shew to one of many sand-filled geotextile tubes that stabilize the beach and learned more about ongoing beach nourishment activities, shoals and dredging, longshore currents and erosional patterns. Members took a walk to the rock-filled, semi-permeable terminal groin located on South Beach before making their way to the next stop.

The second stop was at one of the island's many observational or monitoring wells. All of the island's water comes from water-supply wells. Professor Zamora provided an overview of the complex hydrogeology of the island through water level observations in these

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One of the many sand tubes seen on South Beach

(Continued from Page 7)

monitoring wells including the freshwater-saltwater interactions and the Ghyben-Herzberg principle. Some participants commented on the poor condition of the wellheads and the lack of locking caps on some of the wells, and suggested the island staff bring the wells into compliance with North Carolina's well construction standards (15A NCAC 2C).

Members took a brief lunch pitstop, courtesy of Maritime Market, on their way to stop 3 at the BHI golf course. Professor Zamora demonstrated how the island's inhabitants and the BHI conservancy track the precious freshwater resources in the island's interior using a 3-D numerical groundwater model he created and validated using observations in monitoring wells.

Participants made a final stop at the BHI Conservancy, where executive director Chris Shank discussed ongoing conservation projects, concerns about the islands freshwater resources, and the role of the conservancy in facilitating dialogue with its residents and researchers at UNCW.

The Hart Hickman logo is at the top, featuring the company name in blue and green text with a stylized green wave icon. Below the logo is the tagline "SMARTER ENVIRONMENTAL SOLUTIONS" in green. The main image shows a man in a blue jumpsuit and yellow hard hat, wearing blue gloves, using a tool to sample soil from a dark, rocky ground. Overlaid on the image is the text "A trusted partner serving your environmental consulting needs." and the website "www.harthickman.com • (704) 586-0007".



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Martin L. Stout Scholarship

By Josh Hanks

The Martin L. Stout scholarship is awarded by the AEG Foundation every year in honor of Dr. Martin L. Stout, Professor of Geology at California State University from 1960 to 1990. Dr. Stout was well known for his expertise on mega landslides, his worldly travels, his good humor, and his gracious manner. This scholarship supports his legacy.

Melissa Magno, one of our recently graduated AEG Carolina's Chapter members, who was awarded this scholarship in 2017 during her time at East Tennessee State University (ETSU). The Martin L. Stout scholarship partially funded her research, which was co-authored by Dr. Arpita Nandi and Dr. Ingrid Luffman of ETSU's Department of Geosciences. Melissa's research was recently published in *Applied and Environmental Soil Science* and the full research article can be found at <https://www.hindawi.com/journals/aess/2019/6432571/>. The article's abstract is included on the following page.

Virginia DOT Job Posting

The Virginia Department of Transportation's Environmental Division is seeking one (1) candidate for their Environmental Commitment Inspector (ECI) position. This position will work as a strategic environmental compliance inspector with an interdisciplinary team to provide environmental inspection management, planning, guidance, and technical assistance for transportation projects. The ECI will assist the Environmental Compliance Program Manager in developing and implementing enhancements to the Environmental Commitments Program and the Environmental Performance Program for the state and/or district, as warranted. This position will provide expert technical assistance, advice, and guidance on proper implementation of and compliance with the following: water-quality permit conditions; environmental document commitments; cultural resources commitments; hazardous materials commitments; threatened and endangered species commitments; other state and federal environmental commitments, laws, regulations, guidelines and policies; and VDOT Road & Bridge Specifications.

For more details or to apply, please use the following link: <https://virginiajobs.peopleadmin.com/postings/168628>

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Using Spatial Regression to Model Potentially Toxic Metal (PTM) Based on Physicochemical Soil Properties

By Melissa A. Magno, Arpita Nandi, and Ingrid E. Luffman.

Abstract

Mining processes generate waste rock, tailings, and slag that can increase potentially toxic metal (PTM) concentrations in soils. Un-reclaimed, abandoned mine sites are particularly prone to leaching these contaminants, which may accumulate and pose significant environmental and public health concerns. The characterization and spatial delineation of PTMs in soils is vital for risk assessment and soil reclamation. Bumpus Cove, a once active mining district of eastern Tennessee, is home to at least 47 abandoned, un-reclaimed mines, all permanently closed by the 1950s. This study evaluated soil physicochemical properties, determined the spatial extent of PTMs (Zn, Mn, Cu, Pb, and Cd), and examined the influence of soil properties on PTM distribution in Bumpus Cove, TN. Soil samples ($n = 52$) were collected from a 0.67 km^2 study area containing 6 known abandoned Pb, Zn, and Mn mines at the headwaters of Bumpus Cove Creek. Samples were analyzed for Zn, Mn, Cu, Pb, and Cd by microwave-assisted acid digestion and flame atomic absorption spectrometry (FAAS) (12–1,354 mg/kg Zn, 6–2,574 mg/kg Mn, 1–65 mg/kg Cu, 33–2,271 mg/kg Pb, and 7–40 mg/kg Cd). Of the measured PTMs, only Pb exceeds permissible limits in soils. In addition to the PTM analyses, soil physical (texture, moisture content, and bulk density) and chemical (pH, cation exchange capacity (CEC), and total organic carbon (TOC)) properties were evaluated. Spatially weighted multivariate regression models developed for all PTMs using soil physicochemical properties produced improved results over ordinary least squares (OLS) regression models. Models for Zn ($R^2 = 0.71$) and Pb ($R^2 = 0.69$) retained covariates e^{pH} , moisture content, and CEC (Zn), and pH and CEC (Pb). This study will help define PTM concentration and transport and provide a reference for state and local entities responsible for contaminant monitoring in Bumpus Cove, TN.

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Below is a quick breakdown of the exciting things happening at ES:



Added Inventory / Supplies:

Along with several items added to our growing inventory, here is a quick list of those specialty items that have been requested:

- Core Drill w/ water kit
- Hammer Drills
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- SVE System (Pilot Testing)
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Carolina Board Meeting Minutes 9-4-2019 from 5pm to 6pm—Conference Call*By Jennifer Thomas—Secretary*

1. Call to Order
2. Roll Call: Paul Weaver, Susan Avritt, Beca Deal, Jacob Hundl, Maddie German, Walt Plekan, Jenn Thomas, Rick Kolb (joined late)
3. Carolinas Chapter Finances – Walt
 - a. Review of current chapter finances:

Checking: \$43,037

Savings: \$21,607

Total: \$25,944.69

Sponsor revenue approx. \$7,525
 - b. Rick is wondering if we should put some savings into a CD that makes more than 0.01%. 9 mos is 1.9%. \$173. It may not be worth the effort to move and manage it and it isn't accessible. It needs to be documented to National. Walt will investigate.
4. Chapter Meetings
 - a. Greensboro October meeting (Jacob to organize)
 - i. Speaker ideas? Cyrus Parker/DOT. Rick is having lunch with him soon and thinks he'll be interested. He last gave a talk about a recent DOT project in Greensboro, approx. 2 years ago. Jacob can reach out



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to GO3T2 presenters. Reach out to Cynthia Palomares, AEG President. Jacob knows her. Date not set yet. Board wants to use the same venue as last year. It needs to be booked within the next two weeks.

- b. Keep non-member rate the same for this meeting; increase for Charlotte
5. GEONews
 - a. Deadline for the Fall issue is September 18th
 - b. Winter issue should have a write-up of the Annual meeting? Paul can use his write up for the national AEG news.
6. Membership
 - a. Beca has agreed to be the Membership Chair
 - b. Beca would like to have a call to discuss what her duties are
 - c. Renewals down this year, as a Chapter and nationally. As of June, 118 full/paid memberships; 100 student memberships
 - d. Last year, as of December: 143 full/paid memberships; 111 student memberships
 - e. September is the beginning of the 2020 renewal period—send out an email blast in September

(Continued on Page 14)

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- f. Updates to developing 2020 membership using NC PG list? SC list should be used as well. We can buy each list for \$25-\$35.
- 7. Sponsors—Eric
 - a. 19 sponsors, \$7,525
 - b. Begin reaching out later this year (many of our sponsors are sponsoring the Annual Meeting)
 - c. Use previous sponsor lists to make sure we contact those sponsors that did not renew this year
- 8. NCSTA
 - a. Meeting is November 14 and 15 in Winston-Salem
 - b. Did not attend last year due to cost
 - c. Will Blocher has replaced Randy at NCGS, waiting for Will to send us information for the teacher award donations
 - d. As a non-profit, a booth is complimentary
 - e. Toolkits are \$2.25/each

- f. In 2015, ordered 400 kits. That was too many. We will order 300 (\$675) this year. Paul will take delivery at his office and work the booth. Susan will also take a shift. We'll find out the hours and have sign ups for volunteers.
- g. Susan will contact NCSTA about booth
- 9. Social Activities—Adam/Rick
 - a. US National Whitewater Center in Charlotte this fall? Beca did an event for her company that was unsuccessful due to the heavy traffic and difficulty for people to get there. She suggested Old Mecklenburg Brewery. Walt suggested providing food. Sponsors are interested in helping with food and/or drink. Enviro-Equipment has offered. Adam has been too busy with work to do much with this.
- 10. 2019 Asheville Meeting—Paul
 - a. Who is planning to attend? Paul, Susan, Maddie, Jen T., Beca
 - b. 450 attendees. We expect more than \$6500, 10% of total profits. We have \$11382.42 in scholarship fund and want to use money for that.
- 11. Jahns Lecturer -
 - a. 2020—2021 is Scott Lindvall (Lettis Consultants International)
 - b. Jacob to organize visit to Carolinas
 - c. Probably best to focus on central/eastern NC this year (Deb did western area last year) We'll ask him about Greensboro meeting or April meeting in Raleigh. We will meet him at the annual meeting.
- 12. Visiting Professionals—Brad
 - a. Fall: NCSU, Appalachian State, and UNC Asheville. Let Susan or Brad know if you want to volunteer.


(Continued on Page 15)

(Continued from Page 14)

13. Field Trips—Rohit

- a. May field trip went well
- b. We need to get a list. Susan will reach out to Rohit for a newsletter article. Approx. 22 attendees
- c. Ideas for 2020?
 - i. Boone dam in Johnson City, TN (possible side trip to Gray Fossil Museum)? Possible Asheville meeting in combination if done summer or fall
 - ii. Hiddenite Mine in the summer (good turnout last time)? Spring might be good
 - iii. We may want to repeat other popular trips such as the wine tour.

(Continued on Page 16)



TODD ELMORE
EDR SE Atlantic Regional Manager, GA, NC, SC

C / 706.818.3310
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(Continued from Page 15)


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14. Field Day

Charlotte or Raleigh? Charlotte was done fairly recently but environmental geology is big there. NC State might be good. There aren't enough universities or population in Wilmington.

b. Spring 2020?

15. Clemson student chapter: Their geology department is small but there is potential. Rick needs to find someone to lead the effort. He has some contacts in Knoxville and might be able to get something going there.

16. Poor response for AEG golf tournament at annual meeting. The problem was cost and lack of publicity.

CALENDAR OF EVENTS—2019

Geological Events in the Carolinas

Courtesy of AEG Carolinas Chapter—www.aegcarolinas.org. Last updated October 27, 2019

Send updates/corrections to Alec Dziwanowski, adziwanowski@gmail.com

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

Date: Wednesday, November 13, 2019

Event: Remediation Seminar Short Course

Topic: Optimization and Monitoring for Remediation of Chlorinated and Related Compounds

Location: The Grandover Resort and Conference Center; 1000 Club Rd, Greensboro, NC 27407

Details: <https://www.remediationseminar.com/short-course/us>

Date: Thursday, November 14, 2019

Event: Remediation Seminar Short Course

Topic: Optimization and Monitoring for Remediation of Chlorinated and Related Compounds

Location: NC Biotechnology Center; 15 TW Alexander Dr, Durham, NC 27703

Details: <https://www.remediationseminar.com/short-course/us>

Date: Thursday, November 21, 2019

Event: Meeting of South Carolina Association of Environmental Professionals

Presentation: TBD (facebook.com/SCAEP.org)

Cost: No charge for paid members or first-time attendees

Time: Social with food/beverages at 6:30 pm; Meeting 7:00 pm

Location: Jim Hamilton-L.B. Owens Airport – 1400 Jim Hamilton Boulevard, Columbia, SC (unless posted otherwise)

Contact/RSVP: Melanie Goings at MELA-NIE.GOINGS@santecooper.com

Date: Monday, December 2, 2019

Event: NCWRA Luncheon, Forum and Webinar

Topic: Guiding Stream Management using Biological Potential

Location: Jane S. McKimmon Center; 111 Gorman Street, Raleigh, NC

Details: <http://www.ncwra.org/event-3602800>

Date: Tuesday, December 2, 2019

Event: Eastern Regional Radon Training Center at Rutgers

Topic: Radon in Water

Cost: \$15

Time: 9:00 AM to 3:30 PM

Location: Wake County Commons Building, Rooms B and C; 4011 Cary Drive, Raleigh, NC 27610

Details: <http://gwpnc.org/meetings.html>

Date: Tuesday, December 3, 2019

Event: Groundwater Professionals of North Carolina Half Day PFAS and Other Emerging Contaminants Update Workshop

Cost: \$100 standard, \$75 Gov./State employees

Location: JC Raulston Arboretum at NCSU; 4415 Beryl Road, Raleigh, NC 27606

Details: <http://gwpnc.org/meetings.html>

Date: Thursday, December 5, 2019

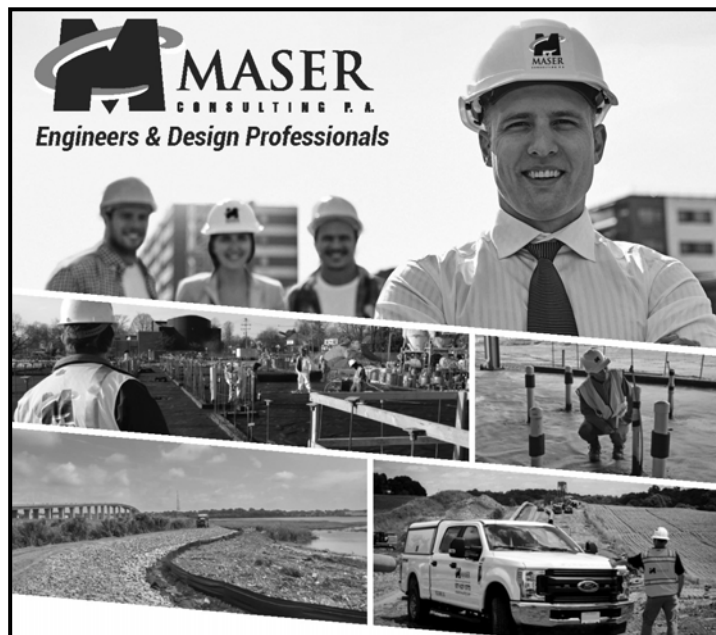
Event: Engineers Without Borders monthly meeting, Research Triangle Park Professional Chapter

Time: Meeting 6:30-8:00 p.m.

Location: Kleinfelder Engineering; 3200 Gateway Centre Blvd Suite 100, Morrisville, NC

Details: <https://www.meetup.com/EWB-USA-RTP-Chapter/>

(Continued on Page 18)



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(Continued from Page 17)

Date: April 1-3, 2020

Event: Clemson Hydrogeology Symposium

Location: Madren Center at Clemson University;
Madren Center Drive, SC, 29631

Registration Deadline: Early Bird: March 1, 2020 /
Online Registration—March 22, 2019

Details: <https://www.clemson.edu/cecas/departments/ees/symposium/index.html>

Date: September 14-19, 2020

Event: AEG Annual Meeting

Location: Portland, Oregon

Costs: TBD

Contact: Heather Clark (heather@aegweb.org)



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Signature _____

My signature attests that, to the best of my knowledge, I meet the academic and practice requirements for the membership class requested and that all information on this application are true and correct.

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The Carolinas Chapter 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.

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