

Serving Professionals in Engineering, Environmental,  
and Ground Water Geology

OREGON SECTION

# NEWSLETTER

The Official Newsletter of the Oregon Section Association of Engineering Geologists

Jan. 1997

VOLUME 97, NUMBER 1

## ***JANUARY MEETING:***

**Speaker:** Rowland French  
Vice President, Northwest Geophysical Associates, Inc.

**Title:** *“Geophysical Electromagnetic Techniques for  
Groundwater Investigations”*

**Date:** Thursday, January 16, 1997

**Times:** 6:00 PM: Social Hour  
7:00 PM: Dinner  
8:00 PM: Talk

**Where:** Busters Barbecue, Banquet Room  
11419 SW Pacific Highway  
Tigard, Oregon

(Located on the north side of highway 99 at I-5)

**Menu:** Buffet Style \$10.00 (Students \$5.00)  
Do not call in choice to AEG, just pick up your choice  
In the buffet line at the meeting

Choose 1 of the following barbecue meats:

1. Beef Brisket
2. Pork Spare Ribs
3. Fresh Turkey Breast
4. Beef Ribs
5. Chicken Half
6. Link Sausage
7. Orange Glazed Ham

**Choose 2 of the following side orders:**

- \* Baked Potato
- \* BBQ Beans
- \* Pinto Beans
- \* Cole Slaw
- \* Potato Salad
- \* French Fries
- \* Green Salad

**Drinks: Purchase you own separately either from the bar  
Or in the buffet line**

**Reservations: Call receptionists at David Newton and Associates: 228-7718.**

## ***Background on speakers:***

It is a real pleasure to have Rowland come and speak to us this month. He makes it to almost every one of our monthly meetings, and it is a long way to drive up from Corvallis each month!

Dr. Rowland French received his M.S. in Physics and his Ph.D. in Geology from the University of Michigan where his thesis work concentrated on paleomagnetism and Paleozoic apparent polar wandering paths. He has spent the 20 years since then performing geophysical investigations to support groundwater, geotechnical and environmental engineering projects in western Canada, Alaska, and the Pacific Northwest. Much of this applied work has been in electrical and electromagnetic techniques, including the development and enhancement of those techniques. Rowland spent 5 years working for SOHIO Petroleum (now BP Exploration) in their "Electrical Methods" group in Dallas, where he advanced interpretation techniques and applications for time-domain electromagnetic methods.

Rowland joined Northwest Geophysical Associates, Inc., in Corvallis in 1988. He is currently Vice President and manages the groundwater, geotechnical and environmental engineering geophysical investigations.

# **ABSTRACT**

Electromagnetic induction techniques (EM) of geophysics can be effectively applied to many groundwater investigations, both for water resources and groundwater contaminants. Faraday's Law and Maxwell's equations form the basis for EM theory. Archie's Law relates electrical conductivity to soil and groundwater properties.

Several variations of the EM technique are in widespread use today, each with its own advantages and disadvantages. Time-domain electromagnetic (TDEM) sounding is one of the more useful in groundwater exploration.

Several case histories illustrate the uses of EM: 1) Shallow leachate mapping from a mining process tailings pile, 2) TDEM mapping of an interbedded clay unit (Selah member of the Ellensburg Formation) in the Columbia River Basalts, 3) TDEM delineation of sub-permafrost aquifer in Hooper Bay, Alaska.

## ***Message from the Chair:***

Welcome to 1997! Our third Thursday meeting crept up on us very quickly and that is why the newsletter is a little late! I am sorry! We had a super meeting last December and I report on it below. This month we feature one of our most steadfast members, Dr. Rowland French, who will be talking about an application of geophysics to groundwater investigations. We invite all of you to join us at Buster's again for a great meeting.

Remember, next month we are meeting jointly with the civil engineers at the downtown Red Lion (just off of I-405 at the 4th street exit). We will probably have about 200 in attendance. It is always a great time.

We lost a great friend to the geology community this past month on December 18th. Dr. John Eliot Allen, professor emeritus at Portland State passed away at the age of 88. He did so many things to help geologists around the state and was a prolific writer. He has a new book out on the geology of hiking trails around Oregon co-authored with Ellen Morris Bishop. There will be a memorial service at Portland State University on Wednesday, January 15th at 3:30 PM in the Vanport Room, Room 338, of Smith Memorial Center.

Both the book and the plans for the national meeting are progressing well! We have so much happening at this time. Have a great 1997! See you at the meeting!

Scott Burns, Section Chair

# AEG Case Histories Book:

The next editors meeting will be January 21st at PSU from 5:30 - 6:30 PM. So far we have 29 of 64 articles turned in. This is the month we are pushing for the articles to be submitted. All is set with the publisher and our editors and we are moving! If you are working on your article, try to turn it in by the 21st. We need to have at least two people review the paper. I am on sabbatical now and am spending all of my time on the book. Remember the final deadline from the publisher is February 28th! Below is a list of the deadlines:

- |    |                   |   |
|----|-------------------|---|
| a) | January 21, 1997  | All Articles due  |
| b) | February 28, 1997 | Final versions of papers returned to Scott Burns (paper copy and disk in preferably Word or WordPerfect along with camera ready figures) - we will send in the whole package to the publisher then; This is the DROP DEAD DEADLINE! |
| c) | March/April/May   | Publisher returns galley proofs to authors for final evaluation   |

Scott Burns, Editor

## *Short news items:*

1) Last Month's Meeting: Many thanks for the great turnout of 30 people to hear Audrey Eldridge of the DEQ and the State Board talk about the possibility of a new registration for hydrogeologists. There was lots of lively discussion! She was searching for our input. The general sense of the meeting that we hope the board will not develop a new registration, like California, but will enforce the laws on the books. The law says that only registered geologists can practice geology in the state. Therefore, any hydrogeology work must be done by a registered geologist. DEQ has for years never enforced this - they reports to go through by non-registered people. One of the big reasons for this lack of enforcement is that many of the people reading the reports at DEQ are not registered. There has been an increase in registered geologists at DEQ so things are improving. Our two recommendations to her were to get DEQ and other state agencies to get registered geologists in the decision making positions and secondly to enforce the laws on the books of requiring registered geologists to do the work.

2) We need photos: Here is your chance to get a favorite photo that you have published. Contact Scott Burns, 725-3389 for details. Bring a slide or print to the next meeting. We need cover photos for the AEG Case Histories book.

4) Check out AEG on the WEB: <http://geoweb.tamu.edu/aeg/>

5) Job Opening: Since Matthew Mabee has left, Portland State University is looking for someone to teach our two courses in seismic site evaluation/seismology and earthquake design engineering. If anyone is interested in teaching one or both of these courses as an adjunct, please contact either Scott Burns (725-3389) or Trevor Smith (725-3225).

6) Job Opening at DOGAMI: "Earthquake Geotechnical Specialist"

The Oregon Department of Geology and Mineral Industries (DOGAMI) seeks to hire an earthquake geotechnical specialist to participate in earthquake hazard reduction efforts. Preferred qualifications include a master's degree in geotechnical engineering or engineering geology, substantial industry experience, professional registration in engineering or engineering geology, and excellent computer abilities. Work will entail seismic ground response analyses, liquefaction analyses, use of geographical information systems and other computer applications, subsurface exploration (drilling, seismic cone penetrometer soundings, writing and managing contracts), report writing, and technology transfer to a diverse audience. Applicants must have proven ability in many of the specific topics listed above. Excellent team skills and skill in written and oral communication with technical and nontechnical audiences are necessary.

This position will be based in Portland, Oregon and involve some travel. It will commence in mid-1997. Salary will be commensurate with experience and includes an excellent benefit package. Negotiation will start at about \$3300 per month. DOGAMI is an equal opportunity employer.

Send resume and cover letter by January 30, 1997 to Mei Mei Wang, Director of Earthquake Programs, DOGAMI, 800 NE Oregon Street, #28, Portland, Oregon 97232-2162. Application package with an explanation of the hiring process will be provided upon receipt of your information.

8) News from the Board of Geologist Examiners: The board is looking for volunteers to proctor both the CEG and RG exams which will both be on April 18, 1996 in Salem. The telephone number for the board is 503-378-4180.

9) New members: We would love to welcome these new members who have joined AEG in the past three months: *Susan L. Bednarz, Paul Carney, David E. Reich, Paul Ecker, Gunnar Schlieder, Timothy Blackwood, Catherine Roso, Christopher Humphries, Harriet Cornachione, Doug Geller, Dan Gilroy, William Thompson, Bill Leonard, Jack Biddle*

## **"AEG - OFFICERS"**

1996 - 1998

<b>Position</b>	<b>Name</b>	<b>Daytime</b>	<b>Home</b>	<b>FAX</b>
<b>Chair</b>	<b>Scott Burns</b>	<b>725-3389</b>	<b>692-9618</b>	<b>725-3025</b>
<b>Chair-Elect</b>	<b>Dave Michael</b>	<b>359-7448</b>	<b>357-0238</b>	<b>357-4548</b>
<b>Newsletter</b>	<b>"</b>			
<b>Secretary</b>	<b>Charlie Hammond</b>	<b>452-1100</b>	<b>274-1437</b>	<b>452-1528</b>
<b>Treasurer</b>	<b>Diane Murbach</b>	<b>228-7718</b>	<b>538-8352</b>	<b>228-7781</b>
<b>Past Chair</b>	<b>Sue D'Agnese</b>	<b>*957-3595</b>	<b>*673-1797</b>	<b>*957-3604</b>
<b>N.M. Treasurer</b>	<b>"</b>			
<b>Membership</b>	<b>Ed Stearns</b>	<b>661-0462</b>		
<b>N.M. Tech. Sessions</b>	<b>"</b>			
<b>N.M. Chair</b>	<b>Gary Peterson</b>	<b>635-4419</b>	<b>697-3100</b>	<b>635-1430</b>
<b>N.M. Field Trips</b>	<b>T &amp; D Kuper</b>	<b>228-7718</b>	<b>638-9722</b>	<b>228-7781</b>
<b>N.M. Publicity</b>	<b>Ken Walsh</b>		<b>652-6107</b>	<b>833-6844</b>
<b>N.M.Short Courses</b>	<b>Mei-Mei Wang</b>	<b>731-4100</b>		<b>731-4066</b>

\* - means area code 541

## *1997 Annual Meeting Update*

To meet our ever increasing demands, a committee meeting is scheduled for January 27. Meeting agenda will include review of budgets and working schedules, work toward a registration form, discussion of promotional opportunities, and reports of various committee members.

Agenda for Planning Meeting:

- 4:00 Review Schedule and Deadlines
- 4:20 Budget reviews by Sue D'Agnese
- 5:00 Review Publications and printing needs
- 5:30 Promotional Opportunities
- 6:00 End Meeting

Thanks,  
Gary Peterson

**Converging on  
Cascadia**



**PORTLAND, OREGON**  
Serving Professionals in Engineering, Environmental and Ground Water Geology

The Oregon Section of the Association of Engineering Geologists is proud to host  
**AEG's 40th Annual Meeting** at the Portland Hilton Hotel.

### ***Converging on Cascadia***

The Portland Hilton is ideally suited, and completely remodeled, for the 40th Annual Meeting. With magnificent French windows, colorful awnings and Italian granite, the Portland Hilton is at the center of the vibrant downtown business and entertainment district. Located nine miles from Portland International Airport, the hotel is close (a short walk) to the performing arts centers, concert halls, museums, and features abundant shopping opportunities with Niketown, Nordstroms, and Columbia Sportswear merely out the hotel door. The Willamette River waterfront is a short walk, and since the AEG '97 visitor is located within the fareless downtown transit area, and 1-block from Portland's award winning light rail system, MAX, you can truly feel free to explore and enjoy, without the need of transportation. The Annual Committee cordially invites you to attend our meeting. Bring your spouse, your family, or a friend and enjoy all that we have to offer at our 40th Annual Meeting!

**Geology** Portland, Oregon lies at the confluence of the Willamette and Columbia Rivers, and encompasses a four-county area. The Portland landscape owes much of its form and beauty to catastrophic geologic events. Sixteen million years ago, lava of the remarkable Columbia River Basalt spread across the area enroute to the coast. About one to two million years ago, dozens of cinder and lava cones developed on the eroded surfaces of the ancient lava and through valley fills; Portland is the only city with a Pleistocene volcano within its boundaries. The great Cascades stratovolcanos near Portland, Mt. Hood, Mt. St. Helens and Mt. Adams, also grew to magnificence during this time. Twelve to Fifteen thousand years ago, Portland was inundated by glacial outburst floods from Lake Missoula. These repetitive floods created the channelled scablands of Washington, then rushed through the Columbia River gorge, tearing vigorously at the flanks of the volcanic hills and spreading thick sheets of sand and gravel across the area to form a great "delta" in the Portland Basin. More recently, geologic evidence has been unraveled that provides a record of great earthquakes, with magnitudes estimated up to 9 and above along the Oregon and Washington coast, just an hour from the Portland area. We invite you all to Converge on Cascadia, the home of many who enjoy the scenic wonder and geology of our great area. To acquaint you with our region, many **Field Trips** are being offered for your enjoyment:

**South Oregon Coast Landslides**--This two-day field trip will begin in Crescent City, California, and travel along the rugged Oregon coastline through melange terrain containing over 30 landslides. Highlights include slides made up one hundred million cubic yards of moving material, to a nearly completed drainage stabilization program including a 200 foot deep, 18-foot drainage shaft in the Arizona Inn landslide. An overnight stay in Gold Beach places you at the mouth of the famous Rogue River. The trip will end at the convention hotel in Portland.

**North Oregon Coast Landslides**--This one-day field trip will provide a flavor of the Oregon coast, as we traverse the coastal mountains to the ocean and back along key state highways that have experienced numerous large- and small-scale landslides and debris flows. Included in our visits will be the Wilson River Slide, a 40 year old tunnel suffering distress along U.S. 101, and major ocean front rockslide stabilization projects.

**Mt. Saint Helens**--In addition to the geology of the blast zone, this one-day field trip will focus on engineering geology of the new 38-mile highway constructed into the national monument. Included are a major sediment retention dam built to contain debris avalanche deposits, the Spirit Lake Outlet Tunnel, and David Johnston Ridge which provides dramatic views into the crater. Much of this area is newly opened to the public.

**Columbia River Gorge**--This trip through the beautiful Columbia River Gorge Scenic Area will feature visits to the Bonneville Locks and Dam complex with emphasis on the extraordinary complex engineering geology faced by recent construction. In addition, you will stop at scenic viewpoints to discuss Columbia Gorge Geology and some of the 130 square kilometers of landslides in the gorge. We will also visit recently restored original gorge highway (including tunnels) that have been converted to pedestrian and bike pathways with tremendously scenic vistas.

**Geologic Signs of a Great Earthquake**--An earthquake near magnitude 9.0 struck western Washington and Oregon in 1700. This field trip, by bus and canoe, will inspect some of the geologic records that document this event, including marshes and forests that suddenly subsided, a sand sheet deposited by the related tsunami, and trees that date the subsidence to late 1699 or 1700. Recent geologic work will also be featured during this trip.

**Portland Quick Trips**-- Half-day "quick trips" will be offered during the conference to view **Portland's Westside Light Rail System (MAX)**. These short trips will include visits to the 3-mile twin tube tunnel and the deepest underground transit station in North America. This project includes a wide-range of engineering geology and geotechnical features, and will be nearing completion, but not yet in revenue service at the time of the meeting. Secondly, a **Portland Geology** field trip providing an overview of our city will include recent geologic problems generated by landslides, flooding and similar during recent winters.

Full, and half-day pre-meeting **Short Courses**, and in-meeting part-day computer lab courses will include:

Seismic Geology	Seismic Hazard Mapping	8-hour OSHA Refresher
Rock Slope Engineering	Stream Restoration/Fluvial Geomorphology	Geoscience GIS
Geoscience on the Internet	Risk Based Corrective Action	

The popular **Teachers Workshop** will be back, this time with an excellent curriculum that includes individual sessions on earthquake and volcanic hazards.

Along with an exceptional 3-day schedule of **Technical Sessions** emphasizing both environmental and engineering geology, we will have special **symposia** focusing on current "Hot Topics" of regional and national importance, including:

Earthquakes & Seismicity	Well Head Protection Implementation	Portland's Light Rail System
Weathered Rock Materials	Risk Based Corrective Action	ASITM Standards: How much is enough?
Well Head Protection	Deterministic vs. Probabilistic Seismic Hazard Assessments	

Casual and entertaining **Guest Activities** are planned:

**Explore Downtown**--Strolling the streets of Portland is a feast for the senses, where you will find quality shops, galleries, bistros, coffee shops, brew pubs, and major department stores and malls, all within a short walk from the Portland Hilton.

**History, Roses and Tea**--Visit Washington Park and the famous Rose Test Gardens, with tea at the turn-of-the century Pittock Mansion. Delightful views of Portland and the Cascades will be found on this trip!

**Get the Brews!**--Portland has an unsurpassed reputation as the hottest craft beer scene in the country, as well as having more microbreweries than any other city in the nation! This is your chance to visit a variety of Micro Breweries and sample the region's award-winning brews, ales, lagers, porters, and stouts.

**Spend a Day at the Beach**--Visit the stunning ocean headlands at Ecola State Park, then walk the beach to Haystack Rock, Oregon's signature "sea stack" rock formation. Fine shopping, galleries, and dining await you in the nearby classy and quaint Cannon Beach.

## **“AEG” CALENDAR:**

- January 10:** Doyle Wilson, Ph.D. defense at Portland State University. 2:00 PM, Cramer Hall S17, “Geology of the Tualatin Valley” - we put this in here just in case you wanted to hear the talk and missed the November meeting
- January 15:** Memorial Service for John Eliot Allen, 3:30 PM, Portland State University, Smith Memorial Center, Room 338
- January 16:** Rowland French, “Electromagnetic Techniques for Groundwater Investigations”
- January 21:** Book editors meeting at PSU, 5:30 PM
- February 20:** Dr. James Gould, 1990 Terzaghi Lecturer, meeting at Red Lion Downtown, Combined ASCE and AEG “Geotechnology in Dispute Resolution”
- March 20:** Open - we are working on trying to get Dr. David Rogers, our 1996 Richard Jahns Lecturer to come to Portland
- April 17** Brian Atwater, “Probabilities of a Great Cascadian Earthquake in the Next 100 Years - the Latest Updates”
- May 15:** Eldon Gath, President of National AEG, “Seismic Hazard Investigation of the San Jacinto Fault through the San Bernadino Valley College”

## **MEMBERSHIP**

*For application forms for Membership in the National AEG, call Ed Stearns who is our membership chair at 661-0462 (h). He will also have copies at the monthly meetings. Membership is on a calendar year basis. Starting this year, if you are a national member, they will collect our local dues of \$10 which just covers our newsletter costs. If you would like to subscribe to the local newsletter (comes out 9 times a year) without being a national member, fill out the form below and mail to Charles Hammond. Note: the following form is only for people and organizations who wish to subscribe to the Oregon AEG Newsletter without being members of the national AEG.*

\*\*\*\*\*  
**APPLICATION FOR LOCAL MEMBERSHIP IN OREGON SECTION, AEG:**

**NAME** \_\_\_\_\_

**AFFILIATION:** \_\_\_\_\_

**MAILING ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

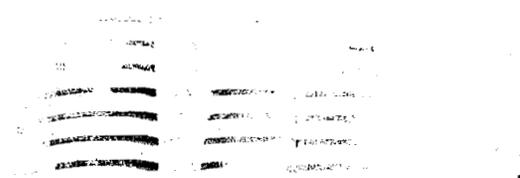
Mail form and \$10 to Diane Murbach, David Newton & Associates, 1201 SW 12th. Ave. Suite 400, Portland, OR

# ANNOUNCEMENT OF OUR NEXT EXCITING MEETING

JANUARY 16, 1997



Dave Michael, Editor  
Oregon Chapter, AEG  
c/o ODF NWOA  
801 Gales Creek Rd.  
Forest Grove, OR 97116



JAN - 9 1997

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