

# The Granite State Geologist



## Newsletter of the New Hampshire Geological Society

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### President's Message

*Greg Kirby*

As this year comes to a close, I normally prepare a message thanking those who donate their time participating Society activities. I also enjoy enumerating the various accomplishments achieved during the membership year. However, I feel this time would be better served expressing my concerns for our professional futures as geologists.

During 1997, several issues concerning the future of the environmental industry in New Hampshire developed, particularly in the field of geology and hydrogeology have arisen. Foremost are the [NH Department of Environmental Services \(DES\)](#) requirements for Remedial Action Plans (RAP). RAPs are prepared for cleanups of hazardous waste and petroleum contamination, a requirement governed by NH Code of Administrative Rules Env-Ws 410. Some Society members may be aware that this notification was sent to environmental firms that do petroleum and hazardous waste cleanups throughout the state. The purpose of the [DES letter](#) (see [next article](#) for excerpts) was to define who will be allowed to prepare and submit RAPs to DES.

According to NH Code of Admin. Rules Env-Ws 410, a RAP must be signed and stamped by a NH-licensed professional engineer (PE). However, The DES correspondence iterates that the PE must also be employed by the company indicated on the letterhead. That is, the PE must be an associate, partner, or principal of the company and not a subcontractor. Consequently, companies without a PE cannot perform RAPs - ever. As a geologist, I am not opposed to the requirement of a PE for RAP designs. In fact, I presume this requirement is expected by all concerned. However, in cases where a RAP recommends a program of monitoring biodegradation, DES still requires a PE stamp when no mechanical designs are required. I believe this dictate gives engineers, without necessarily having the qualifications, clearance to discuss and interpret hydrogeologic conditions at contaminated sites.

Part of the reason for this ruling is because geologic background information was rarely considered an essential criterion for remedial designs. But, I believe it is important for us as professionals to convey our understanding of hydrogeologic processes to DES. Because, this information is the key ingredient for establishing an appropriate remedial design, this information allows DES to make better decisions. Unfortunately, simple and often subjective one paragraph statements of soil descriptions are given. There are usually no references or

comparisons with available geologic information, and 40 and 50 year old references most often used; even though several recent [DES/USGS publications](#) are available through these agencies. Arbitrary comments are commonplace and rarely substantiated with real time data.

Now more than ever we must assert ourselves in this industry, but it has to start at the beginning. First, geology programs in colleges have to become career-oriented, because this is what attracts students. While learning all the wonders of geology is fascinating, not everyone is cut out to be a PhD--professors must be cognizant of people wishing to pursue a non-academic career. So classes in environmental geology and hydrogeology must be required, with electives provided in groundwater and contaminant migration modeling. For some, there is a desire to return to school part-time and gain higher academic standing, essential for career advancement. Because employers are looking at master's of science graduates, continuing education programs should be set up for those wishing to complete a master's degree. Unfortunately, only the engineering programs have attracted of this group.

Admittedly, changes are slowly being made. For instance, the [University of New Hampshire Engineering Department](#) has caught on by setting up courses at night for professionals. They realized that to attract students, and dollars, they had to modify their programs (and because [UMass/Lowell](#) attracts a lot of attention with their program in [Environmental Engineering](#)). So through the engineering department you can get a background in groundwater modeling and hydrology (bedrock and surficial).

At the beginning of 1997, DES foretold of a drastic overhaul in the environmental industry occurring within the next five years. Within this time, they believe site investigations throughout this state should be completed, with most site undergoing active remediation or being monitored for natural attenuation. This means the need for geologists and hydrogeologists will be scarce. So what can be done? Stress the need for more detailed hydrogeologic investigations. Insist on hydraulic conductivity and permeability testing. Anyone can quote from a book, but it takes a geologist to use the intuitive processes necessary to correlate analytical results with the geologic characteristics.

If we want to continue a career in environmental geology, we must emphasize the importance of our roles as geologists. I believe the only way to do this is to get the State legislature to establish a certification or licensing board for geologists. After all, they did it for engineers. I ask that a committee be established, working in conjunction with educators, regulators and professional. Please speak to your legislators and ask what can be done.

We are now up to 175 members. For those who have time, I'm asking that you volunteer to strengthen and advance the science of geology in New Hampshire. As always, Tim Allen can use [material for the newsletter, The Granite State Geologist](#).

See you in January!

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## **Guidance on Requirements for the Preparation of Remedial Action Plans and Remedial Designs**

*The Following text is an excerpt of the November 18, 1997, DES correspondence sent to the consulting community in New Hampshire. Please read carefully.*

Subject: Guidance on Requirements for the Preparation of Remedial Action Plans and Remedial Designs under Env-Ws 410 by Registered Professional Engineers

Dear Colleague:

This guidance is to clarify the requirements for the preparation of Remedial Action Plans (RAPs) and remedial designs by professional engineers in the [Department of Environmental Services' \(DES\)](#) Groundwater Protection

Rules, Env-Ws 410. Specifically, Env-Ws 410.23(d) states, "the remedial action plan shall be prepared by a professional engineer licensed under RSA 310-A."

For purposes of this guidance, "engineering document(s)" mean RAPs, remedial designs, plans and specifications for remediation systems, and related documents. The following standards are applicable to the documents prepared to meet the requirements of the Groundwater Protection Rules and conform with the criteria of RSA 310-A:

1. Engineering documents must be prepared by either a registered professional engineer acting on his own or by a business organization that has a Certificate of Authorization from the State Board of Professional Engineers.
2. RSA 310-A require that any engineering documents be produced under the name of the individual engineer or engineering firm (business organization) preparing the document.
3. A professional engineer registered in the State of New Hampshire must stamp all engineering documents. Engineering documents stamped by an engineer acting as an individual must be prepared by the engineer or under the engineer's direct supervisory control and presented on his/her letterhead. The professional engineer should be licensed in a discipline appropriate to the work being performed (for example, civil, sanitary or environmental disciplines). Please note that review by an independent professional engineer of work performed by another company is not equivalent to direct supervisory control.
4. Environmental consultants or other business organizations which submit engineering documents are practicing or offering to practice engineering, and consequently, must be certified by the State Board of Professional Engineers.

Additional information regarding registration as a professional engineer or the certification of firms or business organizations can be obtained from:

State Board of Professional Engineers  
New Hampshire Joint Board  
57 Regional Drive  
Concord, NH 03301  
(603) 271-2219

Should you have any questions regarding this information, please do not hesitate to contact Mr. Frederick J. McGarry, P.E., D.E.E., at (603) 271-4978 or me [*the author of the letter*] at (603) 271-2755.

*The above was excerpted from a DES guidance letter to the New Hampshire consulting community, dated 11/18/97.*

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## **Katherine Fowler-Billings, 1902-1997**

Katherine Fowler-Billings, an Honorary Fellow of the New Hampshire Geological Society, died in her sleep on December 17, 1997. She was 95 years old. Her most recent scientific contribution, on [avalanches in Kings Ravine](#), was published in the [March 1997 issue](#) of *The Granite State Geologist*. Donations in her memory should be sent to:

The Billings Fund for Research in New England Geology  
c/o [Mount Washington Observatory](#)  
Box 2310  
North Conway, NH 03860

or to the [Society of the Protection of New Hampshire Forests](#), or the [Nature Conservancy](#).

## Northeastern GSA Meeting

Among other symposia, the 33rd Annual Meeting of the Northeastern Section of the [Geological Society of America](#), March 19-21, 1998 in Portland, Maine, will feature a symposium on "The Contributions of [Marland Billings](#) and [Katherine Fowler-Billings](#) to Understanding the Geology of New England," slated for the afternoon of Thursday, March 19. The symposium was organized by Peter Robinson, [University of Massachusetts](#), and Dykstra Eusden, [Bates College](#), who have put together a program of twelve presentations.

The meeting will be held at the Holiday Inn by the Bay, 88 Spring Street, Portland, Maine. The full meeting announcement is published in the December 1997 issue of GSA Today. Pre-registration forms must be received at GSA Headquarters in Colorado by February 13th. On-site registrations will be accepted at the meeting, at a higher rate. For more information, contact the Geological Society of America, PO Box 9140, Boulder, CO 80301-9140, or check the GSA web-site at <http://www.geosociety.org/>

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## NHGS Scholarship and Grant Opportunities

Lee Wilder, Secretary of the New Hampshire Geological Society, wants to remind members that we offer scholarships and grants of up to \$300 through two programs:

1. The [Lincoln R. Page](#) Scholarship helps NH Earth-Space Science teachers, and students, attend regional or national conferences.
2. The Classroom Equipment Grant helps fund purchases of Earth-Space Science equipment and supplies for use in classrooms.

Of course, the NHGS is flexible. Teachers and others having a particular need should write up their request and submit it to: The New Hampshire Geological Society, Scholarship Requests, Suite 133, 26 South Main St., Concord, NH 03301.

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## The Use of Animals in Petroleum and Mineral Resource Exploration

*Dieter Birk*

Dogs: According to a company brochure, Imperial Oil Ltd. (Toronto) uses dogs to find hydrocarbons: Recently, Imperial has used trained Labrador Retrievers to find oil seeps. Specifically, they want to locate leaks in underground pipelines. An odorized fluid "Tekscen" is injected into the pipeline and the dogs detect the seepage to surface. The retrievers can smell 1 part per billion-billions. These canine detectives have located leaks in frozen ground and in lines buried for 30 years. Could the same canines find natural hydrocarbon seeps?

Termites: The thick overburden in Botswana precludes the use of geophysics to locate kimberlite pipes for diamond exploration. Much of the country is covered by the Kalahari sand (at Jwaneng: about 50 metres). The best way to find diamonds there is to search for indicator minerals brought to the surface by termites. The termites can burrow down to depths of 100 metres in search of water. Yorkton Securities Inc. published a photo in a 1993 brochure (The Revitalized Diamond Market) showing a termite bringing a Cape Yellow diamond to surface in the Kalahari Desert.

*From a posting by [dieter.birk@geofuel.north.net](mailto:dieter.birk@geofuel.north.net) to [sci.geo.geology](#) usenet newsgroup.*

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## NHGS News and Events

For the January 1998 Winter Meeting, Keith Robinson of the [USGS Water Division](#) will highlight the latest water quality assessment program undertaken by the USGS. Keith is a supervisory hydrologist in charge of the [New England Coastal Basins National Water-Quality Assessment Study \(NWQA\)](#). This study began last year and is part of a national program designed to assess ground- and surface-water quality of major rivers and aquifers throughout the country. Keith will discuss the results of the study to date with specific focus on the ground water resources of the region. The study area includes the coastal drainage from Narragansett Bay in Rhode Island to the Kennebec River basin in Maine. The discussion will summarize nutrient, pesticide, trace metal and volatile organic compound data for a seven year period. The dinner meeting will be held on Thursday, January 8 at the Bedford Wayfarer Inn, with a cash bar beginning at 6:00 pm, and dinner at 7:00 pm. There will be a choice of entrees. Costs for members will be \$17.00 and \$18.00 for non-members. Don't forget that there is a \$2.00 charge for paying at the door.

Future Meetings of the Society are scheduled for Thursday, April 9, 1998--we expect Father Skehan to be our guest--and Thursday, October 8, 1998 (speaker yet to be determined). For the summer field trip and family outing, we are currently negotiating with John Creasey of Bates College to show us some igneous rocks somewhere near Lake Winnepesaukee.

The next meeting for the Society's Board of Directors is scheduled for February 18, to be held at the offices of Hager-Richter Geoscience in Salem, NH. Current directors are: Greg Kirby, President; Gene Simmons, Vice President; Lee Wilder, Secretary; Gretchen Rich, Treasurer; Tim Allen, Member-at-Large; Dorothy Richter, Member-at-Large. Please contact one of the directors should you have anything you would like the Board to consider.

We thank Steve Shope for taking over the maintenance of the Society's membership lists. Tim Allen continues to maintain the Society's [web-site](#) and to publish our [newsletter](#). We welcome your contributions. Send submissions to the NHGS, Suite 133, 26 South Main Street, Concord, NH 03301 or [tallen@keene.edu](mailto:tallen@keene.edu)

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