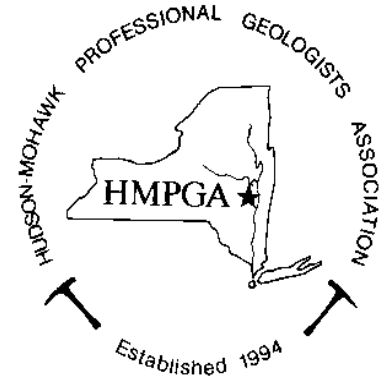


# Hudson-Mohawk Professional Geologists' Association

## October Newsletter

[www.hmpga.org](http://www.hmpga.org)



**October 17, 2007**

### **Sediment Transport through Tidal Freshwater**

**Speaker: Gary Wall**

**Abstract:** Millions of dollars are spent annually on dredging and sediment disposal to sustain the billions of dollars the New York and New Jersey Harbor represents to the regional economy. Quantifying the mass of sediment movement to the harbor from the Hudson River is a first step toward eventually reducing sediment loading to the harbor and associated maintenance costs. Previous attempts to quantify mass transport in the freshwater tidal Hudson have been constrained by limited time series data on both suspended sediment concentration and water discharge.

This talk will focus on an ongoing cooperative project between the NYS Department of Environmental Conservation and U.S. Geological Survey in which data from an acoustic Doppler current profiler (ADCP) is being used to assess both suspended sediment concentration and river discharge every 15 minutes. Data from this project have allowed new insights, which will be discussed, into the amount, timing, and mechanisms of sediment transport through the tidal freshwater river.

#### *About the Speaker*

Gary Wall is a hydrologist with the U.S. Geological Survey New York Water Science Center in Troy, NY where he has worked on a variety of water quality projects over the past 12 years including the Hudson River National Water Quality Assessment (NAWQA) program and the New York/New Jersey Harbor Contaminant Assessment and Reduction Project (CARP). More recently, he has worked on projects that assess the transport of suspended sediment to and through the tidal Hudson River. Gary received a B.S. in Geology from Providence College in 1989 and an M.S. (1990) and PhD (1995) in Geology from Rensselaer Polytechnic Institute.

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HMPGA sponsors, coordinates, and participates in events to help educate the community and its members with respect to geological or geotechnical issues. Events include regular meetings with evening dinners and guest speakers. Other events include workshops, short courses, or field excursions. If

### **October's Meeting and Event Information:**

**When:** October 17, 2007

#### **Schedule:**

### **Calaway Grill**

#### **The Saratoga Room**

(attached to the Wingate Hotel)  
661 Albany Shaker Road, Colonie

Board Meeting	4:30pm
Social Hour	5:00pm
Dinner	6:00pm
Program (free)	7:00pm

#### **Dinner:**

\$10.00/person for student members  
\$20.00/person for members  
\$22.00/person for non-members

#### **Notes:**

Vegetarian or fish meals are available with prior request. Individual will be responsible for the cost of dinner unless a cancellation notice is received 24 hours prior to the meeting. Walk-ins will be charged an additional \$2.00.

**Reservations:** Reservations are required for dinner attendance. Call or e-mail Diane Merolla at (518) 348-6995 or [dmerolla@alphageoscience.com](mailto:dmerolla@alphageoscience.com) by noon on **October 17, 2007**. Please register even if you are only attending the Program.

Thank you in advance!



## PRESIDENT'S MESSAGE

It is with much sadness and regret that I begin this month's message with news of the untimely death of **Mr. William (Bill) Cooper**, one of the founding members of HMPGA. After a courageous five-year battle with melanoma, Bill passed away on September 19, 2007 at the age of 51. Bill is survived by his loving wife, Kim, and his two daughters, Caitlin and Emily. At the time of his death, Bill was employed by the NYSDEC Division of Mineral Resources as a Mined Land Reclamation Specialist.

Bill will always be remembered for his dedication to geology, and for the optimism, grace, and dignity he displayed to his peers on a daily basis. As so eloquently stated by Mr. Dean Herrick, also a founding member of HMPGA and a very close friend, "Although he (Bill) never stood in the spotlight on projects, you always knew that he was involved in the process. Bill was one of the most positive and caring people I have ever met, always wondering more about how his friends were doing than about himself." A memorial service will be held for Bill Cooper on October 6<sup>th</sup> at 11:00 a.m. at the Prince of Peace Lutheran Church located at 4 Northcrest Drive in Clifton Park.

Our October speaker will be **Mr. Gary Wall**, a hydrologist with the U.S. Geological Survey New York Water Science Center in Troy. During the past 12 years, Gary has worked on a variety of water quality projects, including the Hudson River National Water Quality Assessment (NAWQA) program, and the New York/New Jersey Harbor Contaminant Assessment and Reduction Project (CARP). With regards to the latter project, it is significant to note that **millions** of dollars are spent annually on dredging and sediment disposal to sustain the **billions** of dollars the NY/NJ Harbor represents to the regional economy. Quantifying the mass of sediment movement to the harbor from the Hudson River is a first step toward eventually reducing sediment loading to the harbor and associated maintenance costs. Unfortunately, previous attempts to quantify mass transport in the freshwater tidal Hudson have been constrained by limited time series data on both suspended sediment concentration and water discharge.

Gary's presentation on **October 17th** will focus on an ongoing cooperative project between the NYS Department of Environmental Conservation and U.S. Geological Survey, in which data from an acoustic Doppler current profiler (ADCP) is being used to assess both suspended sediment concentration and river discharge every 15 minutes. Data from this project have allowed new insights, which will be discussed, into the amount, timing, and mechanisms of sediment transport through the tidal freshwater river. **Therefore, please make your reservations now to attend our October dinner meeting to be held at the Calaway Grill in Colonie on October 17<sup>th</sup>. Plan to arrive between 5:00 p.m. and 6:00 p.m. and enjoy a cold beverage with fellow geologists. Dinner will be served at 6:00 p.m. and the talk will begin promptly at 7:00 p.m.**

As a friendly reminder, it's membership renewal time once again. If you haven't already done so, please send in your dues as soon as possible. A current membership form is included in this newsletter and is also available on our website ([www.hmpga.org](http://www.hmpga.org)). Please remember that the success of HMPGA is directly proportional to the number of active, dedicated members that unselfishly give of their time and energy to the organization. Therefore, it is extremely important that you come to the meetings and social events, volunteer as a speaker, suggest topics and presenters who would be of interest to the group, and most importantly, spread the word to your friends and colleagues that HMPGA is here for them.

I look forward to seeing you on **October 17<sup>th</sup>** at the Calaway Grill!

Steve Le Fevre  
*Managing Geologist with Barton & Loguidice, P.C. in Albany*

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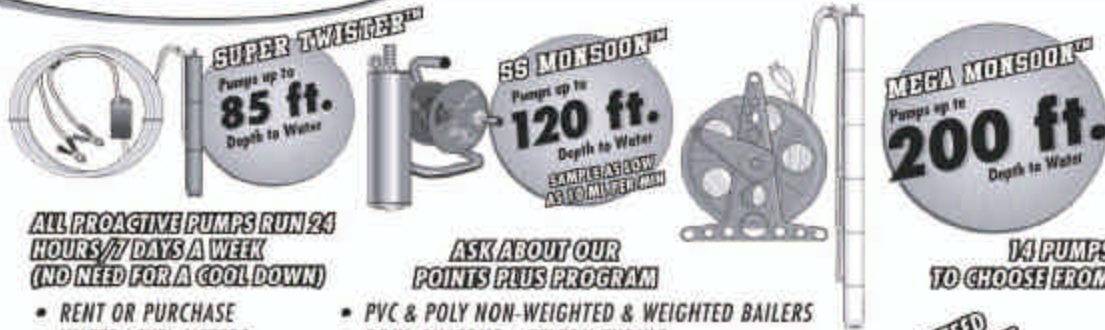
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**Instructors:**

**Jim Butler, PhD, PG** Kansas Geological Survey and 2007 NGWA Distinguished Darcy Lecturer

**Glenn Duffield**, President of HydroSOLVE, Inc. and Developer of AQTESOLV

**Dave Wardwell, PG**, Hydrogeologist at In-Situ, Inc.

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**\*Registration fee must be received in full no later than October 12, 2007.**

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Click [here](#) to register online.

Or fax printed registration page to: 970.498.1598 (Attn: Aquifer Testing Course)

**Questions:**

For technical questions about the course, contact Dan Kelleher at either 763.607.0092 or [dan@midwestgeo.com](mailto:dan@midwestgeo.com).

For registration and travel questions, please contact Jeff Leatherman at In-Situ, Inc. at 970.498.1590 or [jleatherman@in-situ.com](mailto:jleatherman@in-situ.com).

# An inexact science produces tangible results

Using a variety of techniques, highway geologists keep the roads clear of rocks and safe for motorists

By **CATHY WOODRUFF**, Staff writer

First published: Sunday, September 9, 2007

If a rock falls on the New York State Thruway, Mike Vierling hears it.

As engineering geologist for the 641-mile highway system, more than 700 rock slopes -- from slate to schist, sandstone to granite, limestone to lava -- are under his watch. "We've got 'em all," Vierling said. "That's what's special."

Vierling and his counterparts at the state Department of Transportation's Geotechnical Engineering Bureau spend their careers contemplating the assorted ancient layers of Earth's crust that are exposed along New York's highways. And though the past lives of those rocks can be measured in epochs, the geologists say they are keenly aware that potentially tragic consequences could unfold in seconds if one large piece should loosen and tumble tomorrow to the highway below.

It's an event so rare that it's seldom on the minds of most motorists.

"But because they don't think about it, we take very seriously trying to protect them from a risk they don't pay much attention to," said Bob Burnett, director of the Geotechnical Engineering Bureau. This summer, Vierling's attention has been trained on two spots south of Albany where crews worked on two rock remediation jobs.

A \$1.6 million project about five miles north of Coxsackie blasted the steep shale bank back about 20 feet, creating a broad "clear zone" of some 30 feet between the slope and motorists.

At the Exit 20 interchange in Saugerties, Thruway maintenance workers chipped away tons of loosening limestone along the curved entrance and exit ramps. The two jobs were the latest among 50 or so that Vierling says the Thruway Authority has undertaken in nearly 20 years. Over the next seven years or so, the agency's capital program calls for six more projects at a total cost of \$23 million. Over at DOT, Burnett and his crew of geologists maintain a detailed inventory that logs the condition and history of more than 3,000 rock slopes around the state. Each slope receives a rating that helps the geologists gauge whether it's time to employ one or more of several possible stabilization techniques.

Development of the rating system began almost 20 years ago, when Vierling worked there. And as with an extensive inspection and rating program now used to monitor New York's bridges, a rare tragedy propelled development of the system for tracking rock slope conditions.

In January 1988, a boulder weighing an estimated 15 to 20 tons crashed onto a car traveling on the Thruway through the southern tip of Westchester County, killing a passenger. Hundreds of tons of additional rock also tumbled onto the Thruway with the boulder. New York's current bridge inspection system, now considered a national model, was developed in the wake of the 1987 collapse of a Thruway bridge over the Schoharie Creek in Montgomery County.

Thanks to the rock slope rating and monitoring system, Burnett said, "we've got these slopes that we know are out there and we have the expertise to keep them in the best shape we can."



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Rocks might seem to be among the world's most predictable things. They've been around for millions of years and, in upstate New York at least, they've rested comfortably in their current positions for many thousands of years.

But for Vierling and Burnett, the geological formations offer just enough mystery to make their work fascinating.

"It's not like most fields of engineering, where the things you work with are easily predictable," Burnett said. "In most fields, you can order up a certain strength of steel or a certain kind of concrete and get a reliable result with a high level of confidence."

Burnett likened the work of a highway geologist to a meteorologist making weather predictions from a few bits of pertinent information without an absolute full picture.

"We're kind of like detectives," he said. "I think it's more interesting than having everything be predictable and straightforward."

"It's a challenge trying to figure out which slopes are stable and, if they're not, how to stabilize them," Vierling said.

In their eyes, no two rock slopes are the same. The type of rock, a slope's distance from the road, any previous damage from construction, weathering, the volume of traffic on the highway and even the direction of the slope face are among many factors that highway geologists consider when deciding what needs to be done. Sometimes, the scope can almost exceed comprehension for a non-geologist. A major rock-cutting project wrapped up on the Thruway near Little Falls last year removed 100,000 cubic meters of shale, and contractors will likely be back there in coming years to remove more from the eastbound side of the highway, Vierling said.

In part because of such projects, rock falls on New York's highways are rare, and dangerous falls are rarer still. There are fewer than 50 highway rockfalls in New York in a typical year, with the bulk of those occurring during the spring as ice that has formed in the cracks begins to thaw, Burnett said. On the Thruway, Vierling said, "it's been, probably, a couple years since I've had stuff hit the road. There's always a potential for it, but it doesn't happen every year."

One previous trouble spot, the Taconic Parkway, has been a measurable success. "We used to get a lot of rock falls on the Taconic. It's an area where we don't get a lot of rock falls now," said Priscilla Duskin, an associate engineering geologist at DOT.

There could be some active years ahead for highway geologists across America, where large portions of the 46,876-mile Eisenhower Interstate System are at or approaching age 50.

Massive rock cuts were common during construction, and those cuts often were achieved with powerful blasting techniques that left behind fine cracks in the remaining cliffs. In the intervening decades, water and ice seeping into those cracks have contributed to weathering and instability, Vierling said. But once again, Vierling acknowledges, this science is not exact. Is there probably an increase in rock falls in the country because rock slopes are getting old? Sure," Vierling said. "How much, I can't tell you." In New York, at least, the risk should be lessened, he said, because "we've already been pro-active in doing some of our slopes." Still, Vierling won't stop watching.

"Everywhere I go," he admitted, "I look at the rocks."

Cathy Woodruff can be reached at 454-5093 or by e-mail at [cwoodruff@timesunion.com](mailto:cwoodruff@timesunion.com).

### ***Stabilizing slopes***

Here, in no particular order, are the main techniques used by highway geologists to stabilize rock slopes and help keep them in safe condition along New York highways:

- Use a drape of mesh netting over the slope face to catch falling stone.
- Place a tall fence between the rock face and the road to block errant chunks before they hit pavement.
- Secure the rock face with bolts and epoxy resins.
- Blast with explosives to carve the rock face farther back from the highway.
- Dislodge portions of loosening surface rock, pounding them with an excavator in a technique called scaling.
- Design carefully contoured ditches that provide a catchment area for any rocks that do fall.

Source: New York State DOT and Thruway Authority geologists.



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### **CAPITAL DISTRICT BREAKFAST CLUB PRESENTATIONS:**

The Capital District Environmental Breakfast Club is an informal group of environmental professionals that meets monthly to discuss current environmental issues. Each meeting features a speaker on a topic of interest, a regulatory update, and an open forum. Meetings are held on the first Friday of each month except July and August.

The Environmental Breakfast Club meets at the Holiday Inn Turf on Wolf Road in Colonie, New York. Meetings start at 7:30 am. The cost is \$12 per person which includes a full breakfast buffet.

You can find out more details about the Capital District Environmental Breakfast Club at their website:  
[www.youngsommer.com/CM/Custom/TOCEnvironmentalBreakfastClub.asp](http://www.youngsommer.com/CM/Custom/TOCEnvironmentalBreakfastClub.asp)



### **Buffalo Association of Professional Geologists (BAPG)**

The BAPG conducts regular membership meetings on the third Wednesday of the month, January through June and September through November. Meetings feature distinguished speakers and interesting topics. Field trips and technical seminars sponsored by the BAPG encourage the exchange of scholarship and expertise.

Visit [www.bapg.org](http://www.bapg.org) for more information!



### **Central NY Association of Professional Geologists (CNYAPG)**

The CNYAPG conducts regular meetings on the second Thursday of each month from September to May. Meetings feature dinner and distinguished speakers whose presentations invite comment and discussion.

Visit [www.cnyapg.org](http://www.cnyapg.org) for details!



### **LONG ISLAND ASSOCIATION OF PROFESSIONAL GEOLOGISTS**

The Long Island Association of Professional Geologists (LIAPG) is a not-for-profit professional organization dedicated to the professional and business needs of geologists located in the Long Island / Metro New York area.

To contact members or view upcoming events sponsored by the LIAPG, go to their website:  
[www.lipg.org](http://www.lipg.org)



## AIR AND WASTE MANAGEMENT ASSOCIATION (AWMA) NORTHEAST SECTION:

The Mid-Atlantic States Section of the Air and Waste Management Association (MASS-A&WMA) is a professional non-profit association of engineers and scientists working in the environmental field, with a particular focus on issues related to air and waste. The Association strives to provide an opportunity to enhance the profession by providing opportunities for its members to network with other professionals.

Visit the AWMA website for information on professional activities and updated news!  
[www.mass-awma.net](http://www.mass-awma.net)



## THE GEOLOGICAL SOCIETY OF AMERICA (GSA)

The GSA strives to be a leader in advancing the geosciences, while enhancing the professional growth of its members, and promoting the geosciences in the service of humankind.

Discover events and information on their website: [www.geosociety.org](http://www.geosociety.org)



The **New York State Museum** is a major research and educational institution. It is dedicated to promoting inquiry and advancing knowledge in the fields of geology, biology, anthropology, and history, through the investigation of material evidence germane to New York State's past, present and future.

For information on upcoming exhibits visit: [www.nysm.nysed.gov](http://www.nysm.nysed.gov).



## New York State Council of Professional Geologists

*The **NYSCPG** strives to strengthen and advance the geologic sciences as a profession, promote the protection of public health and welfare and the environment through the professional practice of geologic sciences, and create high standards of ethical conduct among its members and within the profession of geology, as well as the legal standing of geologists and their ability to practice geology in New York State by promoting the licensing of geologists in New York State through statutory regulation.*

To learn more about supporting the licensure of professional geologists in NYS, visit: [www.nyscpge.org](http://www.nyscpge.org)



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