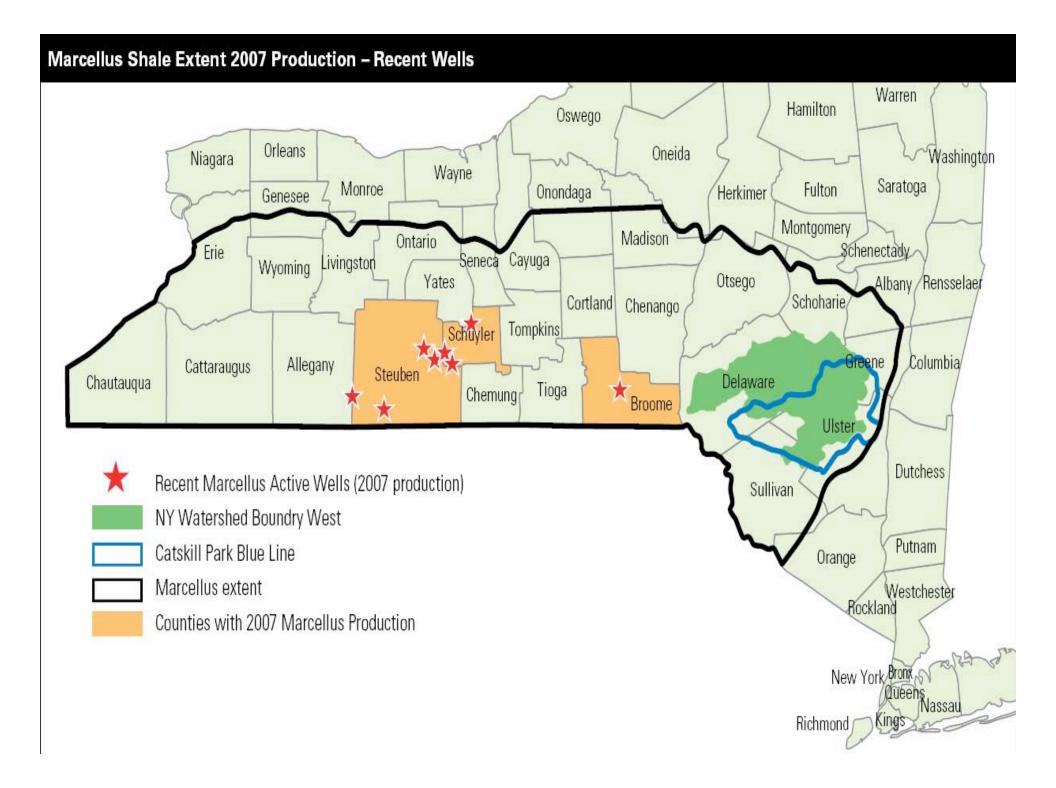
Panel on Environmental and Water Issues

Robert H. Harris, Ph.D. Moderator

The Marcellus Shale Formation New York Mass. Conn. Michigan Pennsylvania New Jersey Ohio Maryland Indiana Marcellus Shale area: West New research shows an Virginia estimated 500 trillion cubic feet of natural gas lines Virginia Kentucky within the rock. **Devonian Black Shale** Succession: The Marcellus North Shale comprises part of this Carolina Tennessee large formation. South Source: Appalachian Fracture Systems, Carolina Alabama Georgia modified from U.S. Geological Survey sources



Schematic of Hydrofracturing Marcellus Shale

Potential Environmental Impacts

- Clearing of land for well pads, wastewater impoundments, and roads
- Truck traffic to haul water, wastewater, and equipment to and from site



Potential Environmental Impacts

- Contamination of ground and surface water from hydrofracking
 - More than a million gallons of water may be required to hydrofrack one well
 - Fracking fluids contain 1-2% organic chemicals, including friction reducers, biocides, surfactants, and scale inhibitors

Potential Environmental Impacts

- Disposal of wastewater residuals and brine
 - "Produced Water" and recovered fracking fluids may be contaminated with synthetic chemicals, hydrocarbons, heavy metals, TDS, and radionuclides

