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Acting Secretary of the Maryland Department of the Environment
Environment and Public Works Committee
Subcommittee on Water and Wildlife
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"Hydraulic Fracturing in the Marcellus Shale and Water Quality"

Chairman Boxer, Chairman Cardin, Ranking members Inhofe and Sessions and honorable members of the Committee, thank you for the opportunity to share Maryland's experience and concerns with hydraulic fracturing in the Marcellus Shale.

The Marcellus Shale in Maryland

The Marcellus Shale formation underlies Garrett County and part of Allegany County in the far western portion of Maryland. In these two counties, gas companies have leased the gas rights on more than 100,000 acres. The Maryland Department of the Environment issues permits for oil and gas wells, and we received our first permit application for drilling and hydraulic fracturing ("fracking") in the Marcellus Shale in 2009. No permits have yet been issued. We currently have applications pending from two companies for a total of 5 wells. We are mindful of the tremendous benefits that could accrue to the environment and the economy by exploring and exploiting our gas reserves, but we are equally alert to the risks of adverse public health and environmental effects. Our paramount concern is protecting our ground and surface waters.

Having observed events in Pennsylvania during the first few years of Marcellus Shale drilling there, Governor O'Malley, the Department of the Environment, and the Department of Natural Resources are determined to ensure that drilling will not start in Maryland until we know whether, and how, it can be done safely. We are proceeding cautiously and deliberately and do not intend to allow drilling and fracking in the Marcellus Shale until the issues are resolved to our satisfaction.

An industry representative estimated that as many as 1,600 wells could be drilled in 128,000 acres in Garrett County and 637 wells in 51,000 drillable acres in Allegany County. There is a huge potential economic impact. Lease payments, royalties, and in Garrett County, severance taxes, and the economic activity associated with drilling-related jobs could bring an economic boom to these western counties and some of their citizens. The consequences of a later economic collapse and the cost of the potential environmental damage are harder to quantify.

Although Maryland has not permitted any Marcellus wells, the Department of the Environment has been attentive to the possible shipment of fracking fluid into Maryland since late 2008. Some flow back from fracking in another state was shipped to Baltimore for treatment and disposal in 2009. The fracking fluid was pretreated and sent to a large municipal wastewater treatment plant that discharges to brackish water and not upstream of any drinking water intake. For these reasons, and because of the small volume of fracking fluid relative to the flow from the wastewater treatment plant, this handling posed little or no risk. A different situation could exist, however, if concentrated fracking water were not treated adequately and discharged upstream of a drinking water intake. Concurrently, we have had discussions with EPA Region III, which is advising states on monitoring to ensure that drinking water remains safe.

Environmental, Public Health and Public Safety Concerns

There are numerous issues that need to be addressed before Maryland can conclude whether and how drilling in the Marcellus Shale can be done safely. They include:

- minimum requirements for constructing, casing and cementing wells
- minimum requirements for integrity testing of wells
- minimum requirements for installing and testing blowout prevention equipment
- the potential migration of gas from the well, including migration from induced or naturally occurring faults and fractures
- the toxicity, fate and transport of fracking fluid
- proper handling and disposal of naturally occurring radioactive materials

- best practices for managing and disposing of flow back
- best practices for managing and disposing of drilling mud and drill cuttings
- best practices for containment and management of fuels and other liquids
- air pollution, including ozone production
- re-fracturing and its potential effect on well integrity
- avoiding habitat fragmentation, invasive species, and damage to wetlands and streams from access roads, drill pads, gathering lines, and ancillary operations
- avoiding other impacts to aquatic ecosystems, including stream sedimentation from damaged roads and dust from truck traffic
- the adequacy and sustainability of surface water and ground water in the region to supply water for fracking
- public safety and emergency response services

Maryland Legislation

Public concern brought the issue of Marcellus Shale drilling to the attention of Maryland legislature, which started its 90-day session on January 12, 2011. Bills were introduced to speed the issuance of drilling permits, place the burden on each applicant for a permit to demonstrate the safety of drilling and fracking, and require a study before permits could be issued. The Governor and the Department supported a bill to require the State to perform a comprehensive study of short-term, long-term and cumulative effects of hydraulic fracturing, to be paid for by those gas companies holding leases in Maryland. Until publication of the report, the legislation would prohibit the Department from issuing a permit involving hydraulic fracturing unless it can be done without adverse impact to human health, natural resources, or the environment. As this is being written, the fate of these various bills in the Maryland legislature in unknown.

How the Maryland Department of the Environment Proposes to Proceed

We anticipate moving forward in two stages. First, during the next year, we will survey existing practices and select Best Practices for the drilling and fracking of wells. These Best Practices will cover all aspects of site preparation and design, delivery and

management of materials, drilling, casing, cementing and fracking. After we develop this interim "gold standard" the Department will consider issuing permits for a small number of exploratory wells to be drilled and fracked in the Marcellus Shale using these standards. Sites eligible for these exploratory permits must present minimum risks to human health and the environment. The permit will be conditioned on the company's commitment to collect and share with the State data from drilling, fracking and monitoring to advance our understanding of the risks and the adequacy of the Best Practices.

Second, we will use the data from these exploratory wells, along with the results of other research as it becomes available, to evaluate the environmental viability of gas production from the Marcellus Shale. This phase will focus on long-term and cumulative risks, and include landscape level effects like forest fragmentation. If we determine that gas production can be accomplished without unreasonable risk to human health and the environment the Department could then make decisions on applications for production wells. Permit conditions would be drafted to reflect Best Practices and avoid environmental harm. At this time, the State has not identified a source of funding for this work, other than the proposed legislation mentioned above.

The Need for Federal Leadership

We need the federal government to take a more active role in studying and regulating activities such as deep drilling, horizontal drilling, hydraulic fracturing, and waste disposal. While the states should retain the authority to enact more stringent requirements, a federal regulatory "floor" would ensure at least basic protection of the environment and public health. In previous administrations, the balance has been struck in favor of energy production over environmental protection. For example, gas and oil exploration and production wastes are excluded from RCRA Subtitle C regulation. The injection of hydraulic fracturing fluids is excluded from the Safe Drinking Water Act's Underground Injection Program. The Clean Water Act was amended to expand the exemption of stormwater runoff to cover all oil and gas field activities and operations, not just uncontaminated stormwater runoff from certain operations. In the absence of a

strong federal regulatory program, the burden of assuring that wells can be safely drilled and hydraulically fractured in the Marcellus Shale falls on the states individually. Maryland believes that federal technical support and oversight of state regulatory programs such as those administered under the Clean Water Act and the Safe Drinking Water Act are particularly important to ensure appropriate protection of interstate waters such as the Susquehanna and Potomac Rivers and the Chesapeake Bay, which are critical resources to all of the jurisdictions in the region.

We commend Congress for directing the United States Environmental Protection Agency (EPA) to conduct research to examine the relationship between hydraulic fracturing and drinking water resources. EPA's Office of Research and Development has developed a solid, comprehensive plan for this study; however, we note that some important issues are beyond the scope of the study, including re-fracturing, and impacts to air quality and terrestrial and aquatic ecosystems.

We are also encouraged by President Obama's "Blueprint for a Secure Energy Future," which he announced on March 30. In particular, we welcome the plan to have the Energy Advisory Board establish a subcommittee to identify immediate steps that can be taken to improve the safety and environmental performance of fracking and to develop consensus recommendations for federal agencies on practices that will ensure the protection of public health and the environment. The offer of technical assistance from DOE and EPA is also welcome.

The states need the federal government to lead and to lend its resources to the effort and we need a strong state-federal partnership. Timing and other factors probably preclude using an exploratory well in Maryland for one of the prospective case studies planned for the EPA report, but we intend to seek EPA guidance on the study plan for the prospective case study so that Maryland can gather the most relevant data if a permit is issued for an exploratory well. We also intend to seek technical assistance from the USGS in determining what to monitor in the process of drilling and fracking wells for exploration, and in analyzing the data we obtain. Preliminary guidance from EPA on the proper

spatial area for monitoring and recommendations for Best Practices to prevent environmental impacts from drilling and fracking operations would be very helpful until the EPA study can be completed. Lastly, EPA should develop water quality criteria for conductivity (specific to chemical species), dissolved solids and salinity in freshwater, as well as pretreatment standards and effluent limitations for fracking flowback.

Under existing federal law, hydraulic fracturing is excluded from Safe Drinking Water Act regulation of underground injection. The chemicals added to fracking fluid do not have to be disclosed. We support the Fracturing Responsibility and Awareness of Chemicals Act, S.587, which was introduced on March 15, 2011, by Senator Casey and co-sponsored by Senator Cardin. The Bill would reinstate regulation of hydraulic fracturing under the Safe Drinking Water Act and require the person conducting hydraulic fracturing operations to disclose to the government all of the chemical constituents used in hydraulic fracturing. Proprietary chemical formulas could still be protected from public disclosure. These are positive steps, although we encourage a reexamination of scope of protection for proprietary information. The public has an important interest in knowing what chemicals are being injected underground.

The Chesapeake Bay Foundation and other groups have filed a petition with the federal government for a Programmatic Environmental Impact Statement to address the risks and cumulative impacts of the extraction of natural gas from the Marcellus Shale formation in the Chesapeake Bay watershed. We support the goal of a comprehensive assessment, and we note that portions of the Marcellus Shale lie to the west of the Eastern Continental Divide, and that the environment outside the Chesapeake Bay watershed deserves protection, too.

Thank you for taking the initiative to inquire into this important issue and for providing the opportunity to share Maryland's perspective.