Pennsylvania House of Representatives
HOUSE REPUBLICAN POLICY COMMITTEE

Public Hearing
Water Safety Issues and Marcellus Shale Drilling
Hopewell, PA
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Testimony Of
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Chairman Reed, members of the Committee, the Susquehanna River Basin Commission appreciates the opportunity to provide comments on the implications of natural gas development on water resources management.

For those of you that may not be familiar with the Susquehanna River Basin Commission, we were created in 1971 as a federal-interstate compact commission by the passage of concurrent legislation in the General Assemblies of the three basin states, Pennsylvania, New York and Maryland, and by the United States Congress, all of which were signed into law by the respective governors and the President to create the Susquehanna River Basin Compact.

Under the terms of the Compact, the Commission is vested with very broad authority in the areas of water resources planning, management, conservation, development, utilization and allocation. Because that authority emanates from the Compact, all actions of the Commission constitute a joint exercise of the sovereign powers of our member states over the water resources of the basin. Our four commissioners are appointed, one each by the governors of our member states, and one by the President (ex officio), and they represent their respective jurisdictions as they take actions that affect the basin as a whole.

In that sense the Commission is somewhat unique; we carry out these authorities not within any one political jurisdiction, but rather within the jurisdictional area of the Susquehanna River Basin. Our jurisdictional boundaries are thus watershed-based, rather than political. While the basin is shared by the three states, most of the basin, nearly 75 percent, is located in

the Commonwealth of Pennsylvania. Approximately half of the entire land area of the Commonwealth lies within the basin.

We appreciate the Chairman's invitation to speak here today on water use associated with drilling in the Marcellus Shale. Let me start by offering a few comments on both the Commission's role in this activity and the steps we have taken to minimize environmental impacts related to water use by the natural gas development industry.

First, our business is water resources management, not mineral resources management. We don't regulate drilling or the production or transmission of natural gas. Nor do we regulate the treatment, disposal and re-use of flowback and production fluids, including brines. These aspects of natural gas development are all managed comprehensively by our member states. Having said that, I will offer some information on what we are seeing in the Susquehanna River Basin in the way of reuse and disposal of these fluids later in my comments.

What we do regulate is the withdrawal and consumptive use of water associated with natural gas development activity. Our management objective is to have this industry avail itself of the water resources of the basin in the development of this important mineral resource, but to do it in way that minimizes impact to the basin's water resources. In the exercise of our regulatory authority we coordinate very closely with the Pennsylvania Department of Environmental Protection to minimize duplication of effort and maximize management efficiency.

In the past, we have seen mineral exploitation occur at the expense of society; where the environmental risk was not mitigated, but instead transferred to the public. We don't want to repeat that history and perpetuate that legacy – and we don't need to. We need to be smart and use the lessons we have learned.

One of the things we realized almost immediately when the Marcellus industry came to town was that our traditional regulatory scheme was not a good fit for this type of activity. Rather than a typical industrial facility located at a specific site withdrawing water at a specific quantity on a regular basis, we quickly realized that this industry in a sense was much more decentralized—it needed to take varying amounts of water from many

different sources to support drilling operations at multiple locations, and at different times over a different duration.

In short, what we realized is that we needed to modify our approach, not to our substantive water resource protections standards, but to how we administratively manage the impacts of this type of water use. Within the first six months, we undertook rulemaking changes resulting in several modifications to our program, and continued to refine them with three additional rulemaking actions, all within the last two-and-a-half years.

Given our concern for the potential for environmental impact, we effectively eliminated our standard regulatory thresholds applicable to all other types of water use (i.e., 100,000 gallons per day for withdrawals and 20,000 gallons per day for consumptive use) with our 2008 rulemaking changes. If you drill for the purpose of hydrocarbon extraction, you need a consumptive use approval from us, and all sources of water used for the operation require advanced Commission approval, regardless of the quantity. For this industry it starts with gallon one.

We also created a new Approval by Rule (ABR) process that enables us to issue consumptive use approvals on a drilling pad basis, rather than an individual well basis, and which imposes monitoring, metering, reporting and mitigation requirements for that specific location. It gives us an efficient administrative mechanism for tracking water sources and water use on the pad site, regardless of the number of wells permitted to be developed at that location by our member states.

On the issue of water quality, we require projects to certify compliance with all applicable state and federal laws for the treatment and disposal of flowback or produced fluids, including brines. We see this as perhaps the most significant issue related to natural gas development activity, more so than water quantity.

Although we have made specific rule changes related to this industry, I should point out that we have not modified any of our current standards or requirements associated with the review and approval of water withdrawals. The natural gas industry continues to be subject to the same standards that all withdrawals across the basin are subject to, and we believe are appropriate to protect our water resources as we simultaneously allow for their utilization to support this important industry.

With regard to the evaluation of withdrawals, we look to whether a proposed taking should be subject to a protective passby flow condition, which restricts the ability to take water during certain prescribed flow events, such as during low flow periods (essentially cutting off the withdrawal when flow conditions reach a certain threshold). We undertake that evaluation using criteria that is applicable to all surface water withdrawals, not just those requested by the natural gas industry. This protocol enables us to evaluate the impact of the withdrawal and involves looking both upstream and downstream to assess cumulative impact, taking into account all other withdrawals and discharges and their impact on instream needs and the resource itself, particularly during low flow periods.

There are currently 167 active surface water withdrawal approvals available to the natural gas industry, with most of them involving a passby condition to protect stream flow. We have an additional 72 applications for surface water withdrawals currently in-house undergoing review.

The industry is now starting to turn to groundwater as a potential source of water and we have recently begun the review and approval of applications for this type of use. To date, we have issued 4 approvals. We anticipate more applications in some of the glaciated regions of our basin, given that base flows in those regions are not well equipped to sustain depletion during low flow conditions. I should point out that the Commission has a very good aquifer testing protocol that is applicable to all groundwater withdrawals, and which can likewise result in passby conditions to protect the resource.

We have also approved the use of 30 public water supply systems as a source for water, 26 of which are located in the Pennsylvania portion of the basin. The industry has turned to these systems to supply approximately 21% of the water used for natural gas development. For the industry, it's a matter of economics – where can it find water closest to the drilling pad site to minimize transportation costs.

Thus far, the Commission has issued a total of 1,876 ABR pad site approvals. The pace of submittal of applications for ABRs has leveled off somewhat from what we experienced in 2010 and 2011.

One of the conditions contained in all ABRs is the required filing of post-hydrofracture reports with the Commission. Among other things, these

reports identify the sources and quantities of water used in the hydrofracture stimulation process, the quantity of flowback (return flow), and the fate of that flowback. These data have made it possible to develop a water use profile of this industry. That profile is dynamic and subject to change over time, but currently (July 1, 2008 through December 31, 2011) provides us with the following information for the 1,163 wells that have been hydro-fractured during this period:

- Water obtained from surface water withdrawals totals 5,278 million gallons (Mgal).
- Water obtained from public water supply systems totals 1,568 Mgal.
- The total water consumed and reported thus far from both sources totals 6,651 Mgal.
- Of that total, 79% is from surface water sources and 21% is from public water supply systems.
- The average total volume used in each operation is 4.37 Mgal, of which 3.84 M/gal is fresh water and 0.52 M/gal is recycled flowback.
- The industry uses approximately 1 million gallons of water use for each 1000 linear feet of horizontal lateral.
- The average recovery of fluids injected is 9%.

This represents our current information on the water use profile for this industry to date and we would be happy to supply the Committee with additional information on a periodic basis. Reports are being submitted on an ongoing basis, resulting in ongoing modification of these profile values.

People are very interested to know what this water use profile data actually represents in terms of the overall impact on the water resources of the basin. A lot of concern is raised about whether we can accommodate another straw in the water, especially by an industry that seems to have a tremendous thirst.

Let me give you the bottom line first. Yes, we can accommodate this use, but it needs to be managed to avoid impacts. The real issues really don't relate to quantity in the larger scheme, but rather to the timing and location of withdrawals, and the ultimate fate (disposal/treatment) of flowback and production fluids. With those aspects properly managed, we can accommodate this level of water use.

From the standpoint of quantity, our current estimate is that use will gradually climb to 28 mgd as the industry goes to full production mode. If it reaches that point, this industry would then be using 10 billion gallons per year. To put that into perspective, 10 billion gallons is what is withdrawn every 3 days in our basin to produce electricity. This is not to suggest that water use for natural gas development is inconsequential, but rather to suggest that relative to all other uses in the basin, it will not have a significant cumulative impact if managed properly.

I should also point out that our current estimates were focused on potential use of water related to development of the Marcellus shale play, and to a lesser extent the Utica. As new shale formations begin to be developed, these estimated numbers will change.

I also wanted to note for the record that the Commission has deployed a remote water quality monitoring network that continuously measures and reports certain water quality conditions in smaller watersheds located in northern tier Pennsylvania and southern tier New York where Marcellus activity is underway.

This real-time monitoring system was designed to allow other resource agencies and the general public to access the data collected through our website. We currently have 51 stations on line and reporting, and will add additional sites as resources become available and need is identified.

The stations continuously monitor and record the following five parameters: temperature, pH, conductance, dissolved oxygen, and turbidity. In addition, water depths will be recorded to establish a relationship with stream flows. The data are transmitted to our website every 2 to 4 hours. In addition to the raw data, the website interface available to the public provides user-friendly access to other critical information and tools, such as tables, graphs, maps and statistics. This system is intended to provide transparency for tracking water quality conditions at stations across the basin.

In addition to the remote sensing, Commission staff are also collecting streamflow measurements, and macroinvertebrate and habitat data. Samples are also collected about 6 times per year at all monitoring station locations and undergo lab analysis for acidity/alkalinity, chlorides, barium, total dissolved solids, sulfate and total organic carbon. Quarterly sampling is analyzed for calcium, magnesium, sodium, potassium, nitrate, carbonate alkalinity, bicarbonate alkalinity, carbon dioxide, bromide, strontium, lithium, and gross alpha and beta (radioactivity).

We believe the data being generated by this network will serve all of us moving forward. The stations cover areas where drilling for natural gas is the most intense (or projected to be) and where smaller streams have not historically been monitored. The data help all agency officials track existing water quality conditions and any changes in them on an ongoing, real-time basis.

Speaking of transparency and the desire of the public to have access to applications and approvals related to this industry, the Commission has a Water Resources Portal on our website that provides access to all SRBC-approved projects and pending water withdrawal and consumptive use applications (www.srbc.net/wrp/Default.aspx). The user-friendly web site allows viewers to locate information using an interactive map or through other search functions, including typing in the names of project sponsors. Viewers also can sign up to receive project updates through an RSS Feed, similar to the Pennsylvania Department of Environmental Protection's eFacts service.

In conclusion, let me just offer that the Commission stands ready to continue to coordinate with and provide value-added service to the Commonwealth as it moves forward with this next generation of natural gas well development.

Thank you.

I would be happy to respond to any questions or comments from the Committee.

Bio –

My name is Bob Schmetzer – presently serving as president of the South Heights Boro Council – and past Mayor, Emergency Management Director & Lt in Fire Dept. I am retired after working for 40 years in the Construction industry working on Energy Projects like the Nuclear Plants, Coal fired Power houses, gas industry, refineries and others –

I am married with 2 children & grandchildren. I served in the USN for 4 years and I am a Viet-Nam veteran. I have a top secret clearance and an honorable discharge.

I recognize Marcellus Gas drilling is here. I also recognize that responsible drilling is necessary for the Health, Safety, and welfare ~~of~~ & any community.

There are More Natural Resources than Natural Gas. There is the Natural air, Natural Water and Natural land that gives sustenance to all life.

We have to protect life now and for future generation

Overview –

The non-resident property owner asked a question of local government. How would your community feel about a Marcellus well on this property –

The facts were searched out and the interested public attended both Crescent and South Heights public meetings and Hopewell officials.

We were told by the public that the risk to them was too great for the reward. To loose their water for any period of time would be too much of a burdon.

To be exposed to toxic and explosive gas is too dangerous.

They requested that local & State government protect their health, safety, and welfare

(2)

Dec 8 - 2011

First Meeting. S. Hgts Boro Mgr called & said Chris Squitiero stopped into Boro Bldg. He wants to drill a gas well on old DLCO property. Could I come to the office? Yes, I went immediately, Also called in was the Mayor, Richard Trauter and CHJA Mgr, Dan Losco Mr Squitiero said he was trying to get a feeling how the community felt about this idea. He had Two ideas one a Marcellus Well and another some type of processing plant. Seince the property is divided between Allegheny & Beaver Co. and the Municipalities of Crescent & South Heights he wanted to have us survey the community. I had an aerial photo of the whole property and took time to identify what was on this and answered his questions. He seemed happy. He gave all of us his business card and said we could call him with any questions.

Chris said If the community dosn't care for this, he and his partner Brian Gentry, property owner, would put the property up for sale —