Pennsylvania House of Representatives
HOUSE REPUBLICAN POLICY COMMITTEE

Marcellus Shale Hearing
Ulster, PA
May 20, 2010

Testimony Of
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Chairman Saylor, Representative Picket and members of the Committee, the Susquehanna River Basin Commission appreciates the opportunity to provide comments here today and we commend your leadership for addressing this very important issue.

For those of you that may not be familiar with the Susquehanna River Basin Commission, we 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 Commissions 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 development of the Marcellus Shale play. 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.

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 nomadic—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 two additional rulemaking actions, all within the last 18 months.

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). If you drill into the Marcellus or Utica shale formations, 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 the resource, particularly during low flow periods.

To date, the Commission has issued 111 surface water withdrawal approvals to the natural gas industry, with most of them involving a passby condition to protect stream flow. We have an additional 55 applications for surface water withdrawals currently in-house undergoing review.

We just recently received our first set of applications for the use of groundwater by the industry, and we anticipate more 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 22 public water supply systems as a source for water, and have an additional 14 systems currently under review. The industry has turned to these systems to supply approximately 41% 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. It's also a matter of management resources – it doesn't want to be in the surface or groundwater withdrawal business if it doesn't have to be.

Thus far, the Commission has issued a total of 662 ABR pad site approvals. The pace of submittal of applications for ABRs risen dramatically since the first of this year; we have logged in 425 applications in that time period.

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 process, the quantity of return flow (flowback), and the fate of that flowback. There are

some preliminary findings that are beginning to emerge from the data reported to us on those reports:

- Of the total amount of water brought onto the drilling pad site, approximately 83% is being used for drilling and hydrofracture treatment.

- Total water withdrawn from surface water locations and used for hydrofracture operations totals 255.8 million gallons (M/gal).

- The total water withdrawn from public water supply systems and used for hydrofracture operations totals 177.2 M/gal.

- The total water withdrawn from both sources totals 433.0 M/gal.

- Of that total, 59% is from surface water sources and 41% is from public water supply systems.

- On an annualized basis, this represents 0.71 million gallons per day (mgd).

- The average total volume used in each operation is 2.8 M/gal, of which 2.4 M/gal is fresh water and 0.4 M/gal is recycled flowback. This number includes both vertical and horizontal wells, and is anticipated to rise as horizontal wells dominate at the levels anticipated. (We are seeing approximately 1 million gallons of water use for each 1000 linear feet of horizontal lateral).

- The average recovery of fluids injected is 11.9%.

- Of the amount recovered, approximately 58.5% (27.4 M/gal) was reused and 41.5% (19.4 M/gal) disposed of for treatment.

- The disposal quantity (19.4 M/gal) represents approximately 4.5% of the total amount withdrawn for hydrofracture operations.

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, I mentioned earlier that we see a current level of use of less than 1 mgd. 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.

I also wanted to note for the record that the Commission is now in the process of deploying a remote water quality monitoring network that will continuously measure and report certain water quality conditions of smaller rivers and streams located in northern tier Pennsylvania and southern tier New York watersheds where Marcellus activity is underway.

This real-time monitoring system is being designed to allow access to the data collected to other resources agencies and the general public through our website. Phase 1 of the project, to be completed mid-year, will involve the deployment of 30 stations across this area of the basin, and we anticipate further expansion over the coming year to perhaps 50 or more stations basinwide.

The stations will 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 will be transmitted to our web site at predetermined intervals, measured in minutes. In addition to the raw data, the web site 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.

Speaking of transparency and the desire of the public to have access to applications and approvals related to this industry, the Commission just recently announced that all SRBC-approved projects and pending water withdrawal and consumptive use applications are now available on the commission's web site at 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 natural gas production issues associated with the Marcellus Shale.

Thank you.

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