



**Testimony of
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New York State Department of Environmental Conservation**

**New York State Assembly
Standing Committee on Environmental Conservation Hearing:
Natural Gas and Oil Drilling**

October 15, 2008

Thank you for inviting me to participate in today's hearing on natural gas and oil drilling. As many of you know, oil and gas exploration and production in New York State is a mature and successful industry, and is subject to a strict and comprehensive regulatory regime overseen by DEC.

What has captured the public's attention and brings us here today is the possibility of widespread drilling using very large volumes of water for hydraulic fracturing with horizontal wells. The proposed exploration of the Marcellus shale formation which stretches across the state's southern tier presents an extraordinary opportunity for New Yorkers to take advantage of a valuable natural resource. There are clearly very significant economic development and energy considerations. Just as clearly, there are very significant environmental concerns, largely revolving around the consumption, use, and disposal of the large volumes of fluids required for the proposed drilling operations.

In my testimony today I would like to summarize DEC's activities regarding the proposed drilling, and briefly address some of the issues that have been publicly raised. I am here today with Brad Field, Director of the Department's Division of Mineral Resources, and we will of course be glad to answer any questions you may have.

DEC is responsible for regulating oil and gas drilling in New York, and administers a stringent regulatory program pursuant to Article 23 of the Environmental Conservation Law. In 1992, DEC issued a Generic Environmental Impact Statement (GEIS) applicable to oil and gas drilling operations, which among other things addressed the impacts from hydraulic fracturing.

Hydraulic fracturing and horizontal drilling are not new processes; they have been used in New York for quite some time. In 1992, however, the typical frac job used less than 100,000 gallons of water, and accordingly the GEIS addresses impacts associated with that level of water use.

Today, there are approximately 13,000 active oil and gas wells in New York State. Many of these used hydro-fracking, and a number of these are horizontal or directional wells. In fact, approximately 10 percent of drilling permit applications received in 2007 were for horizontal or directional wells. What distinguishes the proposed Marcellus shale drilling operations is that the volume of water used for the hydro-fracking will be much greater than previously undertaken in New York. Each well may use anywhere from one million to five million gallons of water, and that raises a host of regulatory issues for us.

Once the Department became aware that drilling companies were interested in exploring the Marcellus shale, DEC began hosting and attending public meetings across the southern tier to provide information to landowners, local government officials and concerned citizens. As some of you know from your constituents, almost overnight people were being asked to sign leases and being told that they would become millionaires, and communities that were not accustomed to oil and gas drilling taking place and which had not seen any significant economic development in decades were being viewed as hubs for this industry.

At the same time, we were working on the legislative proposal known as the spacing bill that ultimately was passed last session and signed into law by Governor Paterson. That bill has been routinely mischaracterized as allowing a new type of drilling. In fact, the new law itself does not

allow any kind of drilling at all. Every oil or gas drilling operation requires a permit from DEC, and these permits are subject to our strict regulatory requirements—requirements which were not changed one bit by the legislation. All the bill did was standardize well spacing requirements, to avoid the need for unnecessary and resource-intensive applications for well spacing variances. The bill established standard well-spacing requirements, in essence putting horizontal drilling on the same administrative footing as vertical drilling when it comes to the spacing of wells. A fact sheet on the bill's provisions and application is attached to this testimony.

From DEC's standpoint, the legislation was important for several reasons. It eliminated an administrative burden that served no real purpose. It also provided a well spacing system designed to limit surface disruption by enabling multiple horizontal wells to be drilled from a single well pad. I want to emphasize here what the bill did not do. It did not weaken or in any way change a single environmental requirement for horizontal drilling or any other drilling activity. It did not make the environmental review and oversight of our well established well permitting process any less rigorous. And it did not change the need for a permit for every single well drilled.

At the time Governor Paterson signed the bill, recognizing that the 1992 GEIS did not contemplate the high water volumes proposed for the Marcellus shale operations, he directed DEC to prepare a supplement to the GEIS to address all potential new impacts. This is an important point – as you will see if you read the GEIS, many aspects of Marcellus shale drilling are already covered in the GEIS. For example, the actual drilling is exactly the same as considered in the GEIS. As you can see in the diagram attached to my statement, multiple layers

of concrete and steel casing are used to isolate the drilling operations and the well itself from contact or exposure to any ground water, and prevent any movement of oil, gas, or water from one geological zone to another. This will not change. There are, however, some aspects of the deep horizontal well hydrofracturing process that are different, and these are the aspects of the drilling process that will be considered in the supplement to the GEIS (SGEIS) that will be developed by the Department.

DEC released a draft scope for the supplement on Monday, October 6, and will be holding a series of public meetings in communities across the southern tier to solicit input from landowners, local government officials, industry representatives, advocacy groups, and any other persons wishing to participate. A copy of the draft scope has been provided to the Committee, and the dates, times and locations of our six planned meetings are also available on our web site (www.dec.ny.gov), along with the GEIS and other information relating to Marcellus shale drilling. As the draft scope makes clear, many of the issues we will be considering relate to the high volumes of fluid used in these operations.

I'd like to quickly run through some of the major issues that we believe need to be addressed in the supplement. The first is water consumption. As I noted earlier, a lot of water will be used, and where it comes from and how this might impact public water supplies and river flows is a significant issue. The area where much of this drilling may occur is subject to the jurisdiction of the Susquehanna and Delaware River Basin Commissions (SRBC and DRBC, respectively), which have tight regulatory controls in place for dealing with water withdrawals from sources within their jurisdictional boundaries. Areas of the state outside these jurisdictions, however, are

not subject to regulation concerning water withdrawals, as DEC's jurisdiction generally extends only to withdrawals for public drinking water supplies. We have heard from the SRBC and industry representatives that relatively speaking the projected total water consumption is not significant, well below that for other commercial activities in the region. Others have claimed that the water needed for these drilling operations could suck the land dry. I assure you, this issue will be thoroughly vetted in preparing the supplement.

Another significant issue deals with the use of water in the drilling process. The large volumes of water I've been talking about are needed for hydraulic fracturing of the shale formation, which is a process where the water is mixed with a proppant such as sand and a small amount of chemical additives, and then forced at high pressure into the shale. This creates cracks in the shale which release the gas trapped there through tiny fissures held open by the sand proppant. We have identified a series of issues in the scoping document that we think need to be addressed in the supplement relating to this aspect of the operation. One of these is the composition of the additives. Typically the water and sand mixture includes small amounts of chemicals such as friction reducers and surfactants to allow the frac fluid to flow into and out of the well more effectively and more efficiently fracture the rock, and a biocide to remove bacteria from the frac water which could impair the frac fluid's ability to carry the proppant. Again, I want to assure you that all potential impacts from this "frac fluid" will be explored in the supplement. We have already declared that the industry will have to disclose to the Department all of the components and additives in the frac fluid in their permit applications – a standard that we will apply to all future drilling operations.

It is important to understand that the hydraulic fracturing takes places many thousands of feet underground, well below any groundwater zones. Groundwater zones are typically hundreds, not thousands, of feet below the surface. The same geology that has sealed natural gas in the rock for millions of years—together with our strict well casing and cementing requirements—prevents any risk of groundwater contamination from the drilling and fracking operation. As a result, the only likely vector for possible threats to groundwater comes from the surface management of the water used in the drilling and fracking operations. .

Although a well is typically fracked only one time (the actual fracking is typically accomplished in a day or two) the fluids that come back out of the ground need to be properly managed and stored. Lined pits or stainless steel tanks are usually used for fluid storage, and we will be examining what requirements may be needed to ensure that there is no risk of environmental harm during movement and storage.

Some of you may have heard horror stories alleging that hydro-fracking operations in other states caused contamination. I can't account for the lack of environmental protections in those locales. But I can tell you that what may have happened in those places—where drilling and production fluids were improperly handled, where unlined permanent waste disposal pits were allowed, and where the disposal method was evaporation—has not happened, and will not happen in New York. Our environmental protections are comprehensive and strong, and are the reason that oil and gas drilling has been a successful industry in New York for so many years, and will continue to be successful in the future, without harming our environment.

Transporting the water and its handling and disposal after completion of the fracking operation are among the issues we have included in the scoping document. Used frac fluid is considered an industrial waste product under New York law. Accordingly, it is subject to our Part 364 regulations, which require identifying its components and what is going to happen to it. Proper disposal, at a permitted wastewater treatment plant or through other acceptable means, is obviously a critical aspect of the process, and that is also a topic that will be addressed in the supplement.

Other issues covered in the scoping document include concerns raised by possible drilling activities in especially sensitive areas such as watersheds - New York City's and that of other communities, or flood prone areas where lined pits may not be an appropriate storage solution; potential truck traffic and other community impacts. The purpose of the public scoping process, of course, is to gain input as to what the SGEIS should address, and while we believe the draft scope is comprehensive, we are eager to take comments. These will be reflected in the final scoping document that will guide the department in the development of the supplement.

With respect to our timetable, we anticipate issuing a final scope in several months, and will be working hard through the early part of next year to produce a draft SGEIS. Once prepared, it will be distributed for public comment, and we are hoping that the SGEIS will be finalized by next spring. With the supplement in hand, we will be able to process permit applications that are consistent with the SGEIS and the GEIS without requiring further SEQR review, although every application will continue to undergo an environmental review. Every application is individually

considered, and if there are issues outside the supplement, DEC will require a further supplement, on a site specific basis, to address those issues.

We are fully committed to doing a comprehensive and thoughtful review. When you combine the possibility of billions of dollars of revenue with the possibility of significant environmental issues with the possibility of rapid changes in communities and people's lives, it is inevitable that emotions will run high, risking mischaracterizations and misstatements coming from all quarters. My job and that of DEC's staff is to make decisions that are based upon fact, science, and engineering, and to meet our statutory and public policy mandates with respect to protecting the environment and recovering our oil and gas resources. The SGEIS process creates the context for doing that.

Questions have been raised about what happens while this public process moves forward. We have received less than a dozen applications for high volume fracking using horizontal wells, and have advised the applicants that each of those applications will require a site specific review addressing the issues I have discussed today and that are reflected in the draft scope, and at this time we do not expect that those applications will be processed until the SGEIS is completed. We are, of course, continuing to process permit applications for natural gas wells in the Marcellus shale and other formations which are consistent with the GEIS.

There have also been questions about DEC staffing to handle the volume of drilling applications that are expected. Right now our Division of Mineral Resources staff is able to handle the volume of well permit applications that we typically receive. Because of the importance of this

matter, and our desire to extend our existing successful regulatory program to high volume hydro-fracking, we are dedicating significant resources to the preparation of the supplement. If a large number of permit requests for this type of drilling come in, we will certainly need additional staff in order to timely process the applications. If our staffing level remains static, however, we will still do a careful and comprehensive job in permitting, but it will take longer.

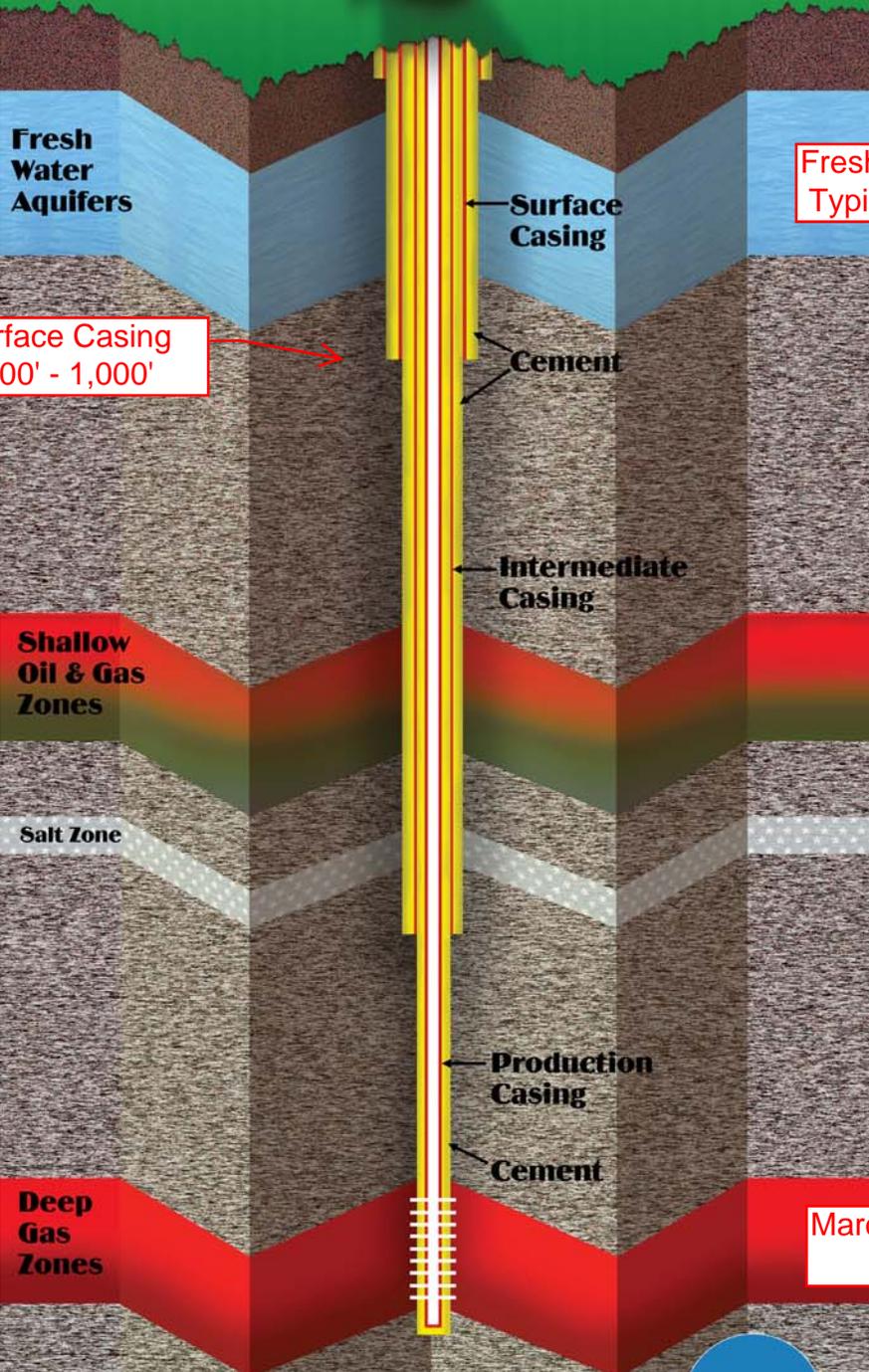
In closing, I invite each of you to participate in the scoping process and in reviewing the draft supplement to the GEIS as we move forward. We have set up a web page specific to the Marcellus shale issues (<http://www.dec.ny.gov/energy/46288.html>) which we will be continually updating, which I hope can serve as a resource to you, your staff and your constituents.

Groundwater Protection

Well Casing and Cementing Program

The Division of Mineral Resources' well casing and cementing regulations provide for the protection of the State's fresh water aquifers

Regulations require that wells be constructed and operated to prevent the movement of oil, gas or water from one zone to another



Freshwater Zones
Typically 0 - 300'

Surface Casing
500' - 1,000'

Marcellus Target Depth
3,000' - 7,000'





New York State Department of

Environmental Conservation

www.dec.ny.gov

FACT SHEET ON CHAPTER 376 OF THE LAWS OF 2008

Updates to the State's Oil and Gas Well Spacing Law

This new law updates the oil and gas well spacing units that were set in 2005 to include spacing units for:

- Vertical and horizontal shale gas wells;
- Horizontal wells in other gas formations;
- Oil wells.

MORE EFFICIENT SPACING PROCESS

These changes will enable DEC to more efficiently and effectively process drilling applications and ensure statewide consistency and timely reviews. Given the recent increase in exploration activity due to the potential development of the Marcellus and Utica shales, these changes are particularly important.

STATEWIDE SPACING FOR OIL, SHALE, HORIZONTAL DRILLING

This law establishes uniform spacing for horizontal wells and for oil wells, which previously were not addressed. Additionally, this law gives DEC the flexibility to approve larger spacing units for shale development, including the Marcellus and Utica shales, with multiple horizontal wells. Where larger spacing units are approved, multiple wells must be drilled from a single well pad. This will result in minimizing disturbed surface areas, while maximizing recovery. The new statute continues to include mandatory setback requirements, protecting other property interests.

Formation	Type of well	Unit Size	Setback
Gas (except shale)	Vertical or horizontal	Same as established in 2005 plus additional acreage if necessary to maintain setback along horizontal portion of wellbore*	460 feet (for 40 and 80 acre units; others unchanged)
Shale (gas)	Vertical	40 acres	460 feet
Shale (gas)	Horizontal with infill wells	Up to 640 acres	330 feet
Shale (gas)	Horizontal without infill wells	40 acres+*	330 feet
Oil in Bass Island, Trenton, Black River, Onondaga Reef	Vertical or horizontal	40 acres+*	460 feet
Other oil	Vertical or horizontal	N/A	165 feet

*All statutory unit sizes accommodate horizontal drilling by providing that the unit size is increased only by the necessary and sufficient acreage to maintain the required setback from the horizontal wellbore.

WHAT'S NOT NEW UNDER THIS LAW

This legislation has often been mischaracterized. This law itself does not authorize any kind of drilling nor does it change DEC's rigorous regulatory process. Operators will continue to be regulated through the drilling permit review process. DEC's review of permit applications includes applying rigorous well and site construction standards to ensure protection of surface and ground waters, and an environmental review of water withdrawals, surface handling, injected fluid composition, and ultimate disposal.