

Comments on the New York Department of Conservation's Revised Draft Supplemental Generic Environmental Impact Statement on the Environmental Impacts of Gas Fracking (hereinafter the DSGEIS) and the Proposed Guidelines within It for Regulating Gas Fracking in New York State.

I am Albert F. Appleton, a former Commissioner of the New York City Department of Environmental Protection. I was the creator of the Catskill watershed program and I am a recognized international expert in water resource management, watershed protection and sustainable resource development. I am writing to comment on the New York Department of Conservation's Revised Draft Supplemental Generic Environmental Impact Statement on the environmental impacts of gas fracking (hereinafter the DSGEIS) and the proposed guidelines within it for regulating gas fracking in New York State.

The Failure of the DEC To Consider the Alternative of Banning Gas Fracking for Lack of the Resources Needed to Pay Its Full Costs and to Provide Projected Socio-Economic Benefits

One of the persistent myths about gas fracking in New York that is fostered by the industry is that gas fracking will be a source of economic activity and well being for upstate New York. In fact, the economics of the industry are such that DEC should be considering banning the activity in New York State as the industry lacks the financial resources to deliver on its promises of economic prosperity and will depend for its profitability on public subsidy and externalizing environmental cost.

The economic press and industry publications are full of stories about the natural gas glut and the collapse of natural gas prices. Currently the spot market for natural gas is at a price below \$3.00 tcf and has tracked steadily downward over the last year. Natural gas storage facilities are full to overflowing. Current financial projections for natural gas prices see no change in this price weakness over the coming decade. .

Industry sources have stated the industry needs a price of \$6.00 per tcf for gas fracking to be profitable. Gas fracking is an expensive process, costing millions per well. In fact, according to the industry sources, natural gas investment is shifting out of gas fracking and into areas where there are combined oil and gas resources that will allow high oil prices to support the extraction of gas resources.

The result of these financial constraints is that the industry lacks the financial resources to pay its full costs or fulfill the economic dreams of its supporters. The New York State Department of Transportation estimated that road damage in New York from gas fracking would exceed \$200 million a year. 10-k filings by the natural gas industry reveal that the industry is carrying only \$450 million in insurance for all of its statewide operations, a pittance in terms of potential mishaps Experience in Pennsylvania and the Inter-Mountain West shows that gas fracking has enormously adverse impacts on adjacent property values and other economic activity, notable farming, tourism and real estate values. A recent cover story in the New York State Bar Association magazine documented the

impact gas leasing could have on upstate mortgages. There are reliable reports of banks refusing to write mortgages on property adjacent to gas fracking and of insurers unwilling to provide homeowner's insurance to properties affected by gas fracking. All of these represent a transfer of economic wealth from other landscape interests to gas fracking, a transfer the

DSGEIS fails to properly assess. Consider Cooperstown, a scenic gem and a model of upstate diversified economic activity. The entire population and community, except for a handful of owners who hope for a windfall profit from gas fracking, are adamantly opposed to allowing gas fracking because of its destructive effects on the scenic beauty, local water resources and tourist resources that are the mainstays of its economy. Across New York State, the result is the same. Gas fracking can only function by an enormous transfer of public wealth to this private sector industry. This is an industry opposed to severance taxes and fees to support proper regulatory processes, indisputable costs of doing business. It is an industry that has given the back of the hand to proposals it pay local impact fees, to deal with damages and stress to roads and other local infrastructure. It is an industry that has essentially said tough to the concerns of adjacent landowners. And it is an industry that has failed to make financial provision for potential cleanup from spills and other environmental damage.

The list of where the industry needs the public to look the other way at industry practices is a long one. There is no infrastructure in New York State for the proper disposal of fracking fluids and no suitable technology for their treatment that the industry is willing to pay for. There is no public health or worker safety infrastructure to deal with the consequences of the high levels of radon that fracking in the Marcellus liberates, no adequate research into underground geology to support the disposal subsurface of fracking fluids. And there is no regulatory system envisioned to compensate adjacent landowners for the cost impacts of gas fracking on them. The reason is simple; the industry cannot afford to pay the costs of doing gas fracking right, of minimizing its landscape impacts. This EIS failed to honestly consider the underlying economics of gas fracking in New York and whether or not it would be a wealth creator or a wealth destroyer. The answer to that question is unfortunately obvious. This is an industry that cannot make gas fracking economically viable over the long term without the destruction of an enormous amount of public wealth. The DSGEIS needs to address that issue and come to the obvious conclusion, that with all its costs and its lack of benefits there is no reason to allow an activity with this many elements of wealth destruction to take place in New York.

The New York City Watershed and the Protection of New York City water system infrastructure

As a former Commissioner of the New York City Department of Environmental Protection, I have long experience with the responsibility of insuring that the water system is not exposed to inappropriate risks that would threaten its critical role in maintaining economic life and public health in New York City. Insuring that the water system is not exposed to such risks is the responsibility of all New York State public

health and environmental agencies. Unfortunately, this SGEIS fails to meet that responsibility.

First to give credit where credit is due. In response to an overwhelming outcry against its initial proposals to allow natural gas drilling using hydraulic fracking in the New York City watershed, and an overwhelming consensus of opinion among water resource experts that to do so would be enormously irresponsible, this DSGEIS has commendably banned all natural gas drilling using hydraulic fracking techniques in the New York City watershed. This was a decision for common sense, sound science, and for putting the interests of the nine million New Yorkers who drink New York water in the forefront of public policy. However, that action left one question unanswered. What should be the buffer zone around City water infrastructure facilities (i.e. the Delaware Aqueduct and a variety of other facilities such as pumping stations) that might have drilling outside of the watershed carried out in proximity to it?

The New York State Department of Environmental Conservation in the DSGEIS has proposed that when drilling takes place within 1,000 feet of the Delaware Aqueduct or another element of the City's water delivery system, the City should be notified and DEC would undertake a special review of the drilling to determine if it poses a particular risk to the water infrastructure. The Hazen and Sawyer report of 2009, which has formed the basis for the City's response to DEC's gas fracking proposals, recommends a mandatory buffer zone of at least seven miles from any drilling pad, citing geological evidence of faults in the underlying gas shale running a distance of at least seven miles that could serve as conduits for the movement of natural gas that could accumulate in proximity to the City's water infrastructure. From my expert perspective, what DEP proposes is the absolute minimum necessary to guarantee the integrity of the City's water infrastructure and the uninterrupted deliver of water from its upstate watersheds to New York City.

This comment will not provide a treatise on hydrogeology, nor is one needed. DEC has provided no scientific geological evidence that purports to show that the Hazen and Sawyer conclusions about the underlying geology of the areas adjacent to New York City water infrastructure are incorrect. Instead, they have taken as a rationale for their buffer zone proposal an obscure statute that supposedly sets a buffer of 1000 feet around City water infrastructure. However, nothing in cited legislation forbids DEC from imposing a larger buffer zone, even one of the width recommended by the Hazen and Sawyer study.

As the City learned during the construction of the Delaware Aqueduct, the surrounding geology is riddle with faults with serve as pathways for the collection and transmission of methane and related gases. The risk that this would take place would only be multiplied through the liberation of underground methane resources by gas fracking. . What would be the consequences for City water infrastructure if that happened?

Gas would migrate through these faults until it hit a piece of City infrastructure and would accumulate against it. The risks would be direct penetration of the tunnels, infrastructure failures from differential pressures, diffusion through the porosity of

infrastructure construction materials and, in rare instances, explosive accidents. The SDGEIS proposes to mitigate these risks by simply requiring coordination with the City for any drilling application that proposes a well pad within a buffer of 1,000 feet from a tunnel. This proposal, which guarantees nothing, is per se inadequate to address the potential risks from gas migration. .

Nor is it sufficient to measure the buffer zone from the location of the wellhead. Running off of the wellhead are laterals as long as two miles, each of which could intersect an underground fault. The buffer zone must be measured from the farthest point of the longest underground horizontal lateral. A two mile lateral intersecting with a potential seven mile fault suggests the need for a buffer zone of ten miles

There is also the question of Microseismicity and induced seismicity. Clusters of small seismic events in locations such as Oklahoma, Arkansas, where shale gas fracking has been proximate to earthquake events have raised a concern that shale gas fracking is lubricating underground fault movements. The question of the impact of underground fluid injects, i.e. fracking, on lubricating faults and promoting seismic activity in areas adjacent to fracking has been one that experts is now hotly debating. Since, however, the City's water infrastructure is in known fault zones and since many responsible experts now agree that induced seismic activity is a real risk, the SDGEIS must correct its failure to address these issues and disclose and analyze the risks. And it must establish an appropriate buffer zone, that once again, consider the potential for fracking liquids to move through natural faults such be a ten mile buffer zone from sites of fluid injection to City infrastructure. .

Application of risk analysis techniques further compels this conclusion. The risk, of catastrophic failure of the City's water delivery infrastructure may be small, but the consequences would be enormous, for public health and for the economic life of the City. A failure in the Delaware Aqueduct would cut off half of the water supply for New York City and Westchester. The costs of such a failure can only be imagined. For what benefit, does the SDGEIS ask the City to accept such risks, risks whose economic consequences would ripple throughout New York State. The sole possible benefit would be to private landowners in the buffer zone, who would lease their land for gas extraction. The volume of extracted gas would not be significant in terms of energy policy, not would the profits to landowners be significant in terms of any overall economic development strategy. In short, DEC must ask itself the question, why, when it has cited no geological evidence refuting the hydrogeologic evidence of the City and of other studies of underground gas migration in shale formations, it would submit an infrastructure resource absolutely vital to the functioning of its largest City and the source of much of the state's tax revenue to such risks of catastrophic failure. And this is before remembering the old infrastructure management adage, if things can go wrong they will go wrong. What DEC must consider in revising the SDGEIS is that if things do go wrong with the City's water infrastructure from migrating underground gas, liberated by fracking, there will be nothing anyone can do about it. As in so many situations with critical infrastructure, the only good answer to trouble is not to get into it in the first place.

Other Concerns

The greatest failure of the SDGEIS, beyond those discussed above, is its lack of recognition that there are other landscapes in New York State beyond the watersheds of New York City and Syracuse that should be placed off limits for drilling. This is an inexplicable failure, particularly given the enlightened perspective taken by the SDGEIS with respect to stream buffer zones, but one must question the legitimacy of a document that would open up an economic and scenic gem such as Cooperstown to resource destroying gas fracking simply to serve the interests of a handful of landowners who are resisting for reasons of obvious self interest a community consensus against gas fracking. Similar questions could be raised about many other locales, such as the wine growing areas of the Finger Lakes, and many of the 70 or so localities that have taken action against gas fracking. These actions have been motivated not only by a fear of the environmental consequences of gas fracking, but by visible evidence from the experience in Pennsylvania of what gas fracking means for local, non gas fracking interests. At the very least, DEC must respond to these concerns with a program of local impact fees that will hold adjacent landowners harmless from the demonstrated economic consequences of fracking.

DEC lacks an enforcement infrastructure. Unless a fee structure that will provide adequate staffing is provided, the entire SDGEIS exercise will be meaningless. Similarly, the oil and gas industry has a long history of controversy over its royalty payments to leaseholders and government. Staffing must be given to the Controller to insure the integrity of any royalty payments by the industry.

Congressman Maurice Hinchey identified the following ten issues as generic faults in the SDGEIS. This comment endorses that conclusions and adds some additional underlined observations.

1. The lack of a cumulative impact analysis of natural gas drilling in the Marcellus formation to understand the full impact drilling could have on our water resources, air quality, local roads and other public infrastructure. This cumulative impact analysis must rigorously document the transfer of public wealth to the natural gas industry that would result from authorizing gas fracking in New York.
2. The lack of a full assessment of the public health impacts of gas drilling through an independent Health Impact Analysis, as called for by more than 250 health care professionals in an October 2011 letter to Governor Cuomo. This analysis must look at not only air and water impacts, but also the issue of radon, both for gas consumers and as a worker safety issue.
3. The lack of a comprehensive wastewater treatment plan that details where and how large amounts of flowback and produced water will be treated or disposed, including how toxic or radioactive contaminants will be removed. Traditional sewage treatment facilities cannot treat fracking fluid, but some operators may be

- tempted by the prospect of high tipping fees to try. Processing of fracking fluid in POTWs and discharge of the effluent to surface waters should both be prohibited.
4. The failure to prohibit the use of toxic chemicals in all fracturing fluids in order to prevent groundwater and surface water contamination.
 5. No requirement to publicly disclose all chemicals used in hydraulic fracturing fluid at each well site, including a proposed list of chemicals made public before drilling operations begin and the final list of chemicals and quantities used made public no later than 30 days after drilling operations are completed.
 6. The absence of a plan to identify New York areas prone to higher seismic activity and measures to prevent earthquakes potentially associated with horizontal hydraulic fracturing.
 7. The failure to require a dramatic increase in DEC resources and staffing devoted to the permitting and oversight activities related to high-volume hydraulic fracturing. See comments above. It will be particularly important that DEC is provided with the staff to provide on-site review and verification of well casing activity, for casing failures present the most immediate threat to underground resources.
 8. A complete ban on land spreading of shale gas drilling waste fluids or prohibition on the use of reserve pits or centralized impoundments for fracking fluids and flowback water.
 9. There must be an alignment of DEC's gas drilling permit rules with the requirements of secondary lending institutions covering oil and gas activity on mortgaged properties. These include pre-approval from banks and other lenders before signing gas leases, minimum setback requirements from residential structures, prohibition on certain drilling and process equipment, title insurance requirements, property assessments, and more.
 10. The SDGEIS fails to provide for an enhanced role for local governments to prohibit gas development that is incompatible with local land-use and zoning regulations. Local governments must be allowed to zone fracking activity out of areas that are high value for other economic activity such as farming or tourism, to keep gas fracking away from schools, parks and other high use public facilities, from aquifer recharge areas, and areas that lack road or other infrastructure necessary to support gas fracking activity.

Respectfully submitted,

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