



RIVERKEEPER.

December 15, 2008

Attn: Scope Comments
Bureau of Oil & Gas Regulation
NYSDEC Division of Mineral Resources
625 Broadway, Third Floor
Albany, NY 12233-6500

Re: *Comments on the New York State Department of Environmental Conservation's Draft Scope for the Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program: Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs*

Dear Sir or Madam:

Riverkeeper, Inc. (Riverkeeper) is a non-profit organization dedicated to protecting the ecological integrity of the Hudson River, its tributaries and the New York City drinking water supply watershed (New York City Watershed.) As a signatory to the 1997 New York City Watershed Memorandum of Agreement, Riverkeeper has a demonstrated interest in protecting water quality and the quality of life for nine million City and upstate consumers who rely on the unfiltered drinking water supply the West-of-Hudson Catskill and Delaware Watersheds provide.

Any proposal for industrial gas drilling in the New York City Watershed through the process of hydraulic fracturing ("fracking") has the great potential to adversely impact surface and groundwater supplies, and bring with it a host of significant adverse impacts to the New York City Watershed and the communities within the New York City Watershed. We therefore offer the following comments on the New York State Department of Environmental Conservation's (DEC or Department) Draft Scope for the Draft Supplemental Generic Environmental Impact Statement (DSGEIS) on the Oil, Gas and Solution Mining Regulatory Program - Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low Permeability Gas Reservoirs (Draft Scope).

Additionally, Riverkeeper helped prepare written comments with the Natural Resources Defense Council, Earthjustice, Catskill Mountainkeeper, the Delaware Riverkeeper Network, the Sierra Club Atlantic Chapter, and the Open Space Institute. These comments appear under separate cover. Riverkeeper offers the following comments tailored specifically to address significant impacts on the New York City Watershed. The final scoping document and the DSGEIS must address the need to create an exclusion zone around the New York City Watershed, and subsurface infrastructure, including a suitable buffer zone. As discussed below, the risk of harm to the unfiltered water supply for half of New York State is too great to justify even limited industrial gas drilling in an area with no history of drilling activity.

I. Sufficiency of the Draft Scope and Necessity of Public Participation

As a preliminary matter, we urge DEC to reopen the public comment period for the Draft Scope, and in the alternative issue an amended Draft Scope for public comment. Governor Paterson directed the Department to prepare the DSGEIS.¹ The Department determined to prepare a supplemental GEIS based upon two key factors: (1) the high volume of water used in the hydraulic fracturing process, and (2) possible drilling in the New York City Watershed and other sensitive ecological areas with no history of drilling.² Both of these factors relate directly to potential significant adverse impacts to the New York City Watershed.

Yet, incredibly, while the Department held six public scoping sessions, it failed to hold any public scoping sessions in the New York City Watershed or anywhere near where the 9 million consumers of this drinking water live. The Department's State Environmental Quality Review Act (SEQRA) regulations mandate that: "Scoping must include an opportunity for public participation."³ Even though consumers of New York City tap water may submit written comments, the Department denied them the opportunity "for public input through the use of meetings...or other means."⁴ While public scoping sessions are not an absolute requirement, because DEC held six sessions outside both the New York City Watershed and New York City and because the two key factors leading to the DSGEIS relate directly to the New York City Watershed, the Department's failure to hold a public scoping session for the 9 million consumers of tap water is unconscionable. Riverkeeper and the public-at-large were effectively denied the benefit of DEC's public scoping sessions. For these reasons the Department should reopen the scoping process to allow the public full opportunity for participation through adequately sited public scoping sessions.

In addition, and as our comments below explain in further detail, the Draft Scope is vague and demonstrably lacking in detail and analysis of fundamental issues. The Draft Scope ostensibly covers hydraulic fracturing in the Marcellus Shale "and other low-permeability gas reservoirs."⁵ However, the Draft Scope fails to define with any specificity what or even where these "other low-permeability" reservoirs are. For example, the Draft Scope mentions "the Utica Shale" which could bring gas drilling to Schoharie County.⁶ The Draft Scope states that DEC proposes to satisfy SEQRA for "most of these" low-permeability reservoirs through this SGEIS.⁷ This vague statement does not even let the public know which gas reservoirs the SGEIS will

¹ See Governor's Office, Press Release, "Governor Paterson Signs Bill Updates Oil and Gas Drilling Law; Pledges Environmental and Public Health Safeguards," July 23, 2008.

² See Draft Scope at 5.

³ 6 N.Y.C.R.R. § 617.8(e).

⁴ *Id.*

⁵ *Draft Scope, Cover; see id. at 2*

⁶ *Draft Scope, at 2.*

⁷ *Id.*

cover. Furthermore, again and again the Draft Scope identifies impacts to study in the Marcellus Shale, but ignores impacts to these “other low-permeability gas reservoirs.”⁸

The Draft Scope also is replete with superfluous “narrative language” for “context” and “background.”⁹ This “narrative language” does not identify any issue that will be addressed in the DSGEIS. Rather, the issues to be analyzed are only those bulleted in the Draft Scope, and summarized in Section 6 of the Draft Scope.¹⁰ Thus, while at first glance this may appear to be a comprehensive Draft Scope based upon the length and number of words, in reality it contains only five (5) pages of issues the DSGEIS will study.¹¹ We request that the final scoping document omit this misleading and superfluous “narrative language” to better inform the public what issues the Department has chosen to analyze.

II. New York City Watershed and the Marcellus Shale¹²

The entire New York City Watershed comprises approximately 4.2% of the state’s land, yet supplies *unfiltered* drinking water to over 9 million New Yorkers (half the State’s population). All surface water and stormwater runoff within the New York City Watershed drains into large reservoirs and travels via gravity through tunnels and aqueducts to the taps of 1 million upstate consumers and 8 million New York City consumers. The entire system delivers 1.2-1.5 billion gallons daily. Significantly, the West-of-Hudson portion of the watershed delivers 90% of this daily supply during normal operating conditions. The West-of-Hudson system includes six reservoirs, their drainage basins, and hundreds of miles of aqueducts and tunnels. The West-of-Hudson portion of the New York City Watershed is roughly 1,560 square miles (1 million acres) and home to approximately 60,000 people.

- *The final scoping document must require that the DSGEIS “identify the important elements of the [New York City Watershed] as well as the existing and projected cultural features, patterns and character.”¹³*

The Marcellus Shale is a large mineral reserve stretching across West Virginia, Pennsylvania, New York, portions of Ohio, as well as under Lake Erie and into Canada. At 54,000 square miles in area the Marcellus Shale is approximately the same size as the State of Florida. New York’s portion of the Marcellus Shale is roughly 18,750 square miles (or 12 million acres). According to DEC, the entire West-of-Hudson portion of the New York City watershed sits on top of the Marcellus Shale. This represents only 8% of New York’s portion of

⁸ See, e.g. Draft Scope at 17 (DSGEIS to discuss radioactive materials in Marcellus Shale without mention of other gas reservoirs).

⁹ Draft Scope at 8.

¹⁰ See *id.*

¹¹ See Draft Scope, Section 6.

¹² As discussed, we are uncertain whether any “other low-permeability gas reservoirs” lay below the New York City Watershed. However, our comments are directed to any and all industrial gas drilling activity.

¹³ 6 N.Y.C.R.R. § 617.10

the Marcellus Shale.¹⁴ We understand from industry representatives that the Marcellus Shale becomes thinner, or less rich, as it extends eastward into the New York City Watershed.

- ***Unlike the Draft Scope, the final scope must require the DSGEIS to document the Marcellus Shale and all “other low-permeability gas reservoirs” with great specificity, including the extent, depth and thickness of the shale.***

III. 1997 New York City Watershed Memorandum of Agreement and the FAD

Riverkeeper played an instrumental role in crafting the 1997 New York City Watershed Memorandum of Agreement (MOA), hailed as “the leading model of how watershed conservation can pay off.”¹⁵ The MOA leveraged a \$1.5 billion program from New York City to protect the vast New York City Watershed and allows the ecosystem to filter the water naturally, instead of the City paying for a filtration plant estimated to cost \$10 billion. In the MOA, New York State, New York City, United States Environmental Protection Agency (USEPA), seventy municipalities, every watershed county, five environmental organizations, and numerous State agencies (including DEC)¹⁶ all agreed that “the New York City water supply is an extremely valuable natural resource that must be protected in a comprehensive manner.”¹⁷

All the parties agreed that economic development within the watershed communities must be consistent with watershed protection.¹⁸ All parties also agreed to maintain and enhance the social character of the watershed towns.¹⁹

- ***As discussed below, the Final Scope must require that the DSGEIS study these issues and DEC’s obligations under the MOA.***

The MOA set the stage for USEPA to issue another waiver from federal laws requiring filtration of all surface drinking water supplies. This waiver, known as the filtration avoidance determination (FAD), continues to allow New York City to implement many watershed protection programs instead of building what is projected to be a \$10 billion water filtration plant (with operating costs of \$1 million a day). USEPA granted New York City a ten-year FAD in 2007.

¹⁴ According the NYS DEC, the New York City watershed covers approximately 8% of New York’s portion of the Marcellus Shale.

¹⁵ GRETCHEN C. DAILY AND KATHERINE ELLISON, *THE NEW ECONOMY OF NATURE*, 66 (Island Press 2002).

¹⁶ The following agencies are MOA signatories: New York State Department of Environmental Conservation, New York State Department of Health, New York State Department of State, New York State Environmental Facilities Corporation and New York City Department of Environmental Protection. The following environmental groups are also MOA signatories: New York Public Research Group, Inc., Catskill Center for Conservation and Development, Open Space Institute and Trust for Public Land.

¹⁷ MOA at ¶ 5.

¹⁸ See MOA at ¶ 6.

¹⁹ See *id.*

- *The Final Scope must require that the DSGEIS discuss potential impacts to the FAD, and provide a cost-benefit analysis in the event industrial gas drilling in the New York City Watershed results in USEPA revoking the FAD, forcing the City to build a filtration plant.*

The Department's regulations mandate that this analysis "may be based upon conceptual information"; should assess the cumulative impacts of multiple wells throughout the New York City Watershed; and should "discuss the logic and rationale for the choices advanced."²⁰

IV. The SGEIS Process Must Study Thoroughly the Need for an Exclusion Zone Around the New York City Watershed

A. Legal Foundation for an Exclusion Zone around the New York City Watershed

Many traditional environmental law principles provide a sound basis and justification for a law, regulation, or SEQRA mitigation measure banning industrial gas drilling within the New York City Watershed and around a suitable buffer zone. These include the precautionary principle, the tragedy of the commons, and conservation law themes.

The Draft Scope notes that there is already an established exclusion zone around all State-owned lands within the Adirondack and Catskill Forest Preserves because these lands are required by the State Constitution to be kept forever wild.²¹ The basis for protecting these natural resources should be expanded to include the entire New York City Watershed.

1. Precautionary Principle

The precautionary principle provides sound justification to ban industrial gas drilling within the New York City Watershed. The precautionary principle is about decision-making, and has become a widely embraced concept of environmental law throughout the world.²² It was articulated in the United Nation's 1992 Rio Declaration (adopted at the 1992 Earth Summit) and provides that government actions should err on the side protecting public health and the environment and a lack of scientific certainty should not preclude the adoption of cost-effective measures to control environmental risks.²³

The precautionary principle is seen in legal case law as well. For example, in 1976 the Washington D.C. Circuit Court of Appeals issued an opinion in a groundbreaking case concerning scientific uncertainty regarding health effects of leaded gasoline. The first sentence of that opinion foresaw many issues now confronting the environment: "Man's ability to alter his environment has developed far more rapidly than his ability to foresee with certainty the effects

²⁰ 6 N.Y.C.R.R. § 617.10(a).

²¹ See Draft Scope at 3.

²² See Robert Percival, *Who's Afraid of the Precautionary Principle?*, 23 Pace Env'tl. L. Rev. 21 (Winter 2005-06).

²³ See *id.*

of his alterations.”²⁴ This case provides a strong endorsement of a precautionary approach to regulating “in the face of danger” stating that “[a]waiting certainty will often allow for only reactive, not preventive regulation.”²⁵

Additionally, in the Reserve Mining litigation, the Eighth Circuit heard Reserve Mining’s appeal *en banc* and upheld the district court’s injunction requiring abatement of discharges of asbestos-like fibers into Lake Superior; but rather than requiring them to stop immediately as the District court had required, the Court of Appeals gave Reserve Mining “reasonable time” to abate the discharges.²⁶ There was substantial scientific study conducted in this case, with results that were less than crystal clear. The court, however, summarized its key rulings, which included that: “No harm to the public has been shown to have occurred to this date and the danger to health is not imminent. The evidence calls for preventive and precautionary steps.” *Id.*

Both New York State and New York City should heed the command of the precautionary principle and set aside the New York City Watershed, comprising only 8% of New York’s portion of the Marcellus Shale, from industrial gas drilling. The risk of contaminating half the State’s drinking water supply is too great a risk to justify industrial gas drilling in the New York City Watershed. Moreover, the five counties in the West-of-Hudson portion of the New York City Watershed have no experience with any oil or gas drilling, and industry representatives assert that the Marcellus Shale formation becomes less rich (“thins out”) as it moves eastward into the New York City Watershed. Notably, such a ban would not apply to areas of New York that have historic experience with environmentally responsible oil and gas drilling. Without question, this is a cost-effective measure to control environmental risk and balances environmental protection with economic development.

- ***The Final Scope must require the DSGEIS to use the precautionary principle when analyzing an exclusion zone around the New York City Watershed.***

2. Tragedy of Commons

The tragedy of the commons teaches that there is a need for regulation in situations where individual rational decisions eventually will produce collectively irrational results.

In 1968 a little known biology professor named Garret Hardin from the University of California, Santa Barbara published an article in *Science* magazine.²⁷ Its premise was that there is a class of problems to which there are no technological solutions. Nuclear war, population growth, and pollution are common examples. Hardin himself used an example of herdsman grazing cattle on an open common. He noted that each individual herdsman, being a rational actor, will try to exploit the pasture as much as possible, until the point when it is useless to all.

²⁴ *Ethyl Corp. v. EPA*, 541 F.2d 1, 6 (J. Skelly Wright, D.C. Cir. 1976) (court acknowledged the high degree of scientific uncertainty, but upheld EPA’s decision to regulate lead in gasoline).

²⁵ *Id.* at 25.

²⁶ *Reserve Mining Co. v. EPA*, 514 F.2d 492, 500 (8th Cir. 1975).

²⁷ Garret Hardin, *The Tragedy of the Commons*, in *SCIENCE MAGAZINE’S STATE OF THE PLANET 2006-2007* 115 (Donald Kennedy, ed., 2006).

The tragedy of the commons exemplifies the cumulative impacts issue and is particularly relevant to industrial gas drilling. While even one industrial gas drilling well may pose problems in and of itself, hundreds or thousands of wells only compound the problem. For example, one well may use 5 million gallons of water in the fracking process, while one thousand wells would use 5 *billion* gallons of water and would present substantial issues regarding disposing of wastewater from these wells.

- ***The Final Scope must require that the DSGEIS analyze the cumulative impacts of industrial gas drilling in order to avoid a tragedy of the commons.***

Furthermore, the tragedy of the commons can be seen in the “gold rush” for gas leases that occurred throughout the Catskills and other areas of New York. Many farmers, local residents, and second home owners were all faced with a choice of whether or not to sign a lease granting mineral rights to gas below their land to land speculators and gas companies. For a low income farmer struggling to make ends meet this might present a financial windfall, considering leases were reportedly selling for as high as \$2,500 per acre, plus royalty fees. Consequently, it might well be a rational, economic decision for an individual landowner to sign such a lease. However, if every landowner in the New York City Watershed signed a gas lease the collective result would be industrial gas drilling throughout the entire New York City Watershed on a grand scale with great potential to contaminate the water supply, and compel New York City to build a \$10 billion filtration plant.

We must strive to ensure that out-of-state gas companies do not try to privatize the commons that is the New York City Watershed and exploit it for their own private gain, to the detriment of all New Yorkers.

3. Conservation Law Themes

One hundred years ago President Theodore Roosevelt said that the “prosperity of our people depends directly on the energy and intelligence with which our natural resources are used.”²⁸ Roosevelt had convened a Conference of Governors at the White House to discuss conservation and the proper use of natural resources. The country was faced with an exponential growth in industrial progress, and Roosevelt proclaimed the need for foresight and wise use of our natural resources as a duty to posterity.

The need for foresight and planning in the use of natural resources is just as relevant today as it was in Roosevelt’s time. There can be no better example than a watershed that supplies unfiltered drinking water to over half of New York State’s population. To that end, Riverkeeper played a lead role in negotiating and drafting the MOA, praised internationally as a model for watershed protection. Designating the watershed off-limits would heed Roosevelt’s call for wise use of this natural resource, particularly when the New York City Watershed is such a small percentage of New York’s portion of the Marcellus Shale.

²⁸ See PROCEEDINGS OF A CONFERENCE OF GOVERNORS IN THE WHITE HOUSE, MAY 13-15, 1908 (Gov. Printing Office) (1909) [hereinafter CONFERENCE OF GOVERNORS] at 7.

- ***The Final Scope must require the DSGEIS to incorporate Roosevelt's call for foresight and the need to protect the New York City Watershed for our children and our children's children.***

Aldo Leopold's conservation ideals also provide strong support for a law, regulation or SEQRA mitigation measure banning industrial gas drilling within the New York City Watershed. As Leopold said, "[c]onservation is a state of harmony between men and land."²⁹ Leopold created the concept of the land ethic and described an ethic as "a mode of guidance for meeting ecological situations so new or intricate, or involving such deferred reactions, that the path of social expediency is not discernible to the average individual."³⁰ He explained that "[e]thics are possibly a kind of community instinct in-the-making."³¹ Leopold's land ethic "simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."³² The land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it.³³ Leopold advised us to quit thinking about decent land-use as solely an economic problem, and to examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient.³⁴

These principles provide strong guidance and support for an exclusion zone or ban on industrial gas drilling within the unfiltered New York City Watershed. Moreover, such an outcome is entirely congruent with the land ethic. As part of its MOA and FAD requirements, New York City operates a host of watershed protection programs designed to let nature filter the City's water supply naturally, rather than build an expensive water filtration plant. These activities, particularly with the economic aid the MOA provides, help achieve a state of harmony between humans and land. As members of the New York City Watershed, it is unethical to permit industrial gas drilling within the drinking water supply source for 9 million people. This is particularly true when so much other land in New York State is available for industrial gas drilling, has a long history with oil and gas extraction, and is closer to the millennium pipeline.

- ***The Final Scope must require the DSGEIS to incorporate the land ethic into the decision whether or not to establish exclusion zones.***

In sum, the precautionary principle, the tragedy of the commons, and traditional conservation law themes all provide sound justification for a law, regulation or SEQRA mitigation measure banning industrial gas drilling within the New York City Watershed.

B. Lessons from Other States - Impacts the DSGEIS Must Study

The surface impacts associated with industrial gas drilling using hydraulic fracturing encompass a whole host of activities and apparatus that are incompatible with watershed

²⁹ Aldo Leopold, *A SAND COUNTY ALMANAC 207* (Oxford University Press 1989) (1949).

³⁰ *Id.* at 203.

³¹ *Id.* at 203.

³² *Id.* at 204.

³³ *See id.*

³⁴ *See id.* at 224.

protection for the drinking water supply of 9 million New Yorkers. A web of pipelines to transport the gas and noisy compressors to push gas from wells through the pipeline system will be needed; large drilling pads capable of handling several wells will be constructed; open ponds to hold produced water and fracking fluids will be used; and hundreds of tanker trucks will be used to haul in water and to remove wastewater.

All of this upheaval and disruptive surface activity that would accompany any drilling process, occurring in a region infamous for heavy flooding and where all surface runoff flows into New York City's unfiltered water supply, is not acceptable.

- *In addition to this surface activity, the Final Scope must require that the DSGEIS study extensively the uncertain impacts of hydraulic fracturing and the extreme amounts of water needed in the fracking process.*
- *The Final Scope must require the DSGEIS to analyze all of these issues on a cumulative basis with respect to the New York City Watershed, particularly in light of the area's inexperience with industrial gas drilling and the unique ecological sensitivity of the area.*
- *The Final Scope must require the DSGEIS to study surface impacts to the New York City Watershed, particularly based upon the experience of areas where this type of activity has already taken place.*

1. Pipeline Impacts

There have been several accidents associated with the web of pipelines necessary to transport gas from a well. For example, in the Barnett Shale on August 28, 2008 a 36-inch natural gas pipeline exploded outside of Stairtown, Texas.³⁵ Fire officials 10 miles away felt the explosion. There are similar size pipelines "all over the place" under Fort Worth.³⁶

- *The Final Scope should require the DSGEIS to examine this issue and the consequences of a natural gas pipeline exploding in the New York City Watershed*
- *The Final Scope should require the DSGEIS to analyze and study the pipeline infrastructure necessary in the New York City Watershed, and all associated impacts from this network*

2. Groundwater Impacts

There have been many reported instances of groundwater contamination shortly after the commencement of a nearby hydraulic fracturing operation.

³⁵ See Peter Gorman, "Peeling the Barnett Shale Onion," *Fort Worth Weekly*, September 10, 2008, available at: <http://www.fwweekly.com/content.asp?article=7161>.

³⁶ *Id.*

- ***The Final Scope should require the DSGEIS to examine these impacts.***

In August 2008, a resident of northern Pennsylvania and his neighbor had their spring-fed water systems ruined shortly after a hydraulic fracturing operation began nearby.³⁷ In April 2008, a farmer in Washington County, Pennsylvania reported methane in his water well and the wells of other residents near him after they allowed gas companies to drill on their land.³⁸ In 2007, a house in Geauga County, Ohio exploded after gas confined in a recently drilled gas well seeped into their house through their underground drinking water supply.³⁹ In 2008 the same thing almost happened again in another Ohio neighborhood when a household's gas-contaminated well was improperly ventilated.⁴⁰

This past July saw the first case of groundwater contamination from hydraulic fracturing documented by a federal agency (although "more than 1,000 other cases of contamination have been documented by courts and state and local governments"). The Bureau of Land Management (BLM) found benzene at 1,500 times the safe level in a water well in Sublette County, Wyoming, where numerous hydraulic fracturing operations are underway.⁴¹ In 2001, a family in Garfield County, Colorado had their groundwater contaminated with methane and 2BE, a dangerous chemical compound used in the drilling process.⁴²

- ***The Final Scope should also require a re-analysis of USEPA's 2004 study regarding hydraulic fracturing and groundwater impacts.***

Subsequent examinations of this report suggest that USEPA's findings may not support its conclusion that hydraulic fracturing is not a threat to groundwater supplies. In the same report, USEPA recorded that fracturing fluids migrated unpredictably and farther than expected through rock layers, that certain chemicals used in hydraulic fracturing were hazardous to human health, and that a third of fracturing fluids typically remain underground and are likely to come into contact with groundwater.⁴³ One of the report's three main authors, Jeffrey Jollie, has also

³⁷ Heidi Zemach, "Gibbs Hill homeowners lose water supply after fracking," *Ridgeway Record* [Ridgeway, PA], August 10, 2008, available at: http://www.ridgewayrecord.com/index2.php?option=com_content&task=view&id=144018&pop=1&page=0&Itemid=1.

³⁸ Tom Kane, "Western PA landowners regret deep gas wells deals," *The River Reporter*, V. 34, No. 15, April 16, 2008, available at: <http://www.riverreporter.com/issues/08-04-10/head1-drilling.html>.

³⁹ Testimony of Bruce Baziel for the Committee on Environmental Protection, Council of the City of New York, September 10, 2008, p. 6, available at: <http://www.earthworksaction.org/publications.cfm?pubID=368>.

⁴⁰ Joan Demirjian, "Home near gas well on brink of explosion," *Chagrin Valley Times*, October 22, 2008, available at: http://www.chagrinvallentimes.com/print_edition.php?id=274.

⁴¹ Abrahm Lustgarten, "Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?," *ProPublica*, November 13, 2008, available at: <http://www.propublica.org/feature/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113/#When:13:00:00Z>.

⁴² Oil & Gas Accountability Project, *Oil & Gas at Your Door? A Landowner's Guide to Oil and Gas Development*, July 2005, p. IV23-IV25, available at: <http://www.earthworksaction.org/publications.cfm?pubID=91>.

⁴³ Abrahm Lustgarten, "Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?," *ProPublica*, November 13, 2008, available at: <http://www.propublica.org/feature/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113/#When:13:00:00Z>.

warned that industry has misrepresented its research. The report focuses only on the threats to groundwater from hydraulic fracturing in coal-bed methane deposits, not in deep geologic formations such as the Marcellus shale.⁴⁴ Thus the research presented in the 2004 report may not apply to all types of hydraulic fracturing operations, nor address all the various environmental impacts, other than threats to groundwater, that hydraulic fracturing presents.

3. Wastewater Disposal

- *The Final Scope must require the DSGEIS to examine the many problems of wastewater disposal in areas that have experienced hydraulic fracturing.*

For example, numerous concerns have been expressed about potential spills or groundwater contamination from injection wells. Recently, a resident of Parker County, Texas discovered BTEX (a volatile mixture of benzene, toluene, ethylbenzene, and xylenes) leaking onto his property from a broken hose on a truck that was supposed to be injecting produced water into an injection well.⁴⁵ In addition, authorities claim that Pennsylvania's geology (and presumably New York's as well) is not as good as Texas's for wastewater injection.⁴⁶

Pennsylvania has recently experienced significant adverse impacts from hydraulic fracturing wastewater sent to traditional wastewater treatment plants. However, these plants generally cannot suitably purify industrial wastewater before releasing it.⁴⁷ In October 2008, the Pennsylvania Department of Environmental Protection (PADEP) announced an investigation into contamination in the Monongahela River from unusually high levels of Total Dissolved Solids (TDS) that PADEP partially attributed to the increased natural gas production in the area. PADEP estimated that about 40% of the problem is due to high volumes of wastewater from gas drilling operations being released by sewage treatment plants along the river. The Monongahela River serves as drinking water for 850,000 residents in the Pittsburgh metropolitan area.⁴⁸ In Ithaca, New York, the Ithaca Area Wastewater Treatment Plant recently began receiving requests to process gas drilling wastewater but has turned drillers away because of gas drilling companies' unwillingness to disclose the chemicals used in the fracturing process. The Ithaca plant says that without knowing exactly what is in the wastewater they will not be able to know if they can effectively treat it.⁴⁹

⁴⁴ *See id.*

⁴⁵ Daniel M. Huffman, "Residents angry with county drilling, pipeline companies," *Weatherford Democrat*, October 22, 2008, available at: http://www.weatherforddemocrat.com/local/local_story__296104935.html.

⁴⁶ Elizabeth Skrapits, "Experts: Marcellus Shale will impact entire state," *The Citizens Voice* [Wilkes-Barre, PA] November 19, 2008, available at: <http://www.istockanalyst.com/article/viewiStockNews/articleid/2814112>.

⁴⁷ Jim Parson, "Western Pa. Streams Emptied By Natural Gas Drilling," *The Pittsburgh Channel*, November 17, 2008, available at: <http://www.thepittsburghchannel.com/print/17973811/detail.html>.

⁴⁸ Don Hopey, "State probing contaminants in the Mon River," *Pittsburgh Post-Gazette*, October 23, 2008, available at: <http://www.post-gazette.com/pg/08297/922152-113.stm>.

⁴⁹ Kristy Gashler, "Gas drillers want to use Ithaca's treatment plant," *The Ithaca Journal*, November 22, 2008, available at: <http://www.theithacajournal.com/article/20081122/NEWS01/811220323>.

- *The Final Scope should require a discussion of potential destinations for removed fluids and must identify local sewage treatment facilities that are amenable to accepting, and capable of treating, such waste.*

4. Truck Traffic

Trucks hauling water or wastewater after fracking will have to use county and local roads.

- *The final scope must require the DSGEIS to study traffic impacts, both environmental impacts as well as impacts to roads and community character.*

Simply because New York gives localities jurisdiction over local roads does not mean the Department should ignore these impacts in the DSGEIS. Experience from other areas of the country demonstrates that truck traffic has been a significant issue.

There have been many reports of trucking impacts in the Barnett Shale. For example, in Parker County, Texas residents have experienced approximately 100 trucks per day in a neighborhood with only 10 wells drilled.⁵⁰ In addition, after heavy truck use from hydraulic fracturing, one road “looked like it’d been hit by a bomb.”⁵¹ This Texas county later billed three gas companies \$265,000 for the damage.⁵² “There has been an exponential increase in traffic; it’s just much, much heavier than it used to be,” said Ted Reynolds, mayor of Cleburne, Texas, about an hour south of Fort Worth. “Not only the city, but the county and state have been very challenged with the increase in commercial traffic. ... It’s reflected in more accidents and serious damage to the roadways.” Michael Peters, the Texas Department of Transportation spokesman for the Fort Worth area, said the Barnett Shale heavy-truck traffic “has severely stressed our roadways statewide.”⁵³

In Colorado, in 2005, a Halliburton truck spilled 300 gallons of acid into the Colorado River, and in 2006 another Halliburton truck spilled diesel fuel into the Colorado River.⁵⁴

⁵⁰ Testimony of Bruce Baziel for the Committee on Environmental Protection, Council of the City of New York, September 10, 2008, p. 4, available at: <http://www.earthworksaction.org/publications.cfm?pubID=368>.

⁵¹ Lisa Sumi, “Shale Gas: Focus on the Marcellus Shale,” Oil and Gas Accountability Project, Earthworks. May 2008, p. 11, available at: <http://www.earthworksaction.org/marcellusshale08.cfm>.

⁵² Lisa Sumi, “Shale Gas: Focus on the Marcellus Shale,” Oil and Gas Accountability Project, Earthworks. May 2008, p. 11, available at: <http://www.earthworksaction.org/marcellusshale08.cfm>.

⁵³ Peter Gorman, “Peeling the Barnett Shale Onion,” *Fort Worth Weekly*, September 10, 2008, available at: <http://www.fwweekly.com/content.asp?article=7161>.

⁵⁴ Bruce Baziel Testimony, p. 4.

C. MOA and FAD Issues

1. Economic Development in the New York City Watershed must be consistent with watershed protection.

All parties to the MOA, including the Department, agreed that economic development within the New York City Watershed must be consistent with economic development.⁵⁵ However, no economic development could be less consistent with watershed protection than industrial gas drilling. Almost all the proceeds would benefit out-of-state gas companies and drilling workers would most likely be specialized contractors brought in from out-of-state. Nothing in the MOA contemplates or protects the economic vitality of out-of-state gas companies. Moreover, as discussed, the many surface impacts associated with any type of industrial gas drilling activity make this inconsistent with watershed protection. Furthermore, the risk of contaminating an unfiltered water supply for half the state is too great to justify any limited economic development. All parties also agreed to maintain and enhance the social character of the watershed towns.

- *The Final Scope must require the DSGEIS to study whether economic development in the form of industrial gas drilling is consistent with watershed protection and the MOA.*

2. Impacts to Community Character

Industrial gas drilling brings with it a whole host of activities that would be incongruent with the social character of the watershed towns. All parties to the MOA, including the Department, agreed to maintain and enhance the social character of the watershed towns.⁵⁶ The prospect of hundreds of heavy tanker trucks hauling in drilling rigs, fracking chemicals, and millions of gallons of water would be highly disruptive to the social character and agrarian nature of the watershed towns. This will also most likely affect the vital tourism and recreational industry throughout the New York City Watershed and the Catskills.

- *The DSGEIS must analyze impacts to the community character of the watershed towns and whether industrial gas drilling would maintain or enhance the social character of these towns, particularly in the context of the Department's commitments and obligations under the MOA.*
- *The DSGEIS must also conduct an economic analysis of the negative impact on tourism in the watershed communities should industrial gas drilling occur in the New York City Watershed..*

3. Impacts to the FAD

The Draft Scope fails to contain any discussion or identification of issues related to the FAD.

⁵⁵ See MOA at ¶ 6.

⁵⁶ See *id.*

- *The DSGEIS must study all potential impacts to the FAD from industrial gas drilling in the New York City Watershed.*
- *The DSGEIS must study whether industrial gas drilling would be reckless in the context of the FAD and should fully analyze the economic impacts of New York City paying for a \$10 billion filtration plant (with operating costs of \$1 million per day) should USEPA revoke the FAD as a result of industrial gas drilling.*
- *Furthermore, the DSGEIS must study what role of the New York State Department of Health will have in reviewing all industrial gas drilling permits within the New York City Watershed, as they are the primacy agency under the FAD.*

D. The Proposed Discussion of Existing Regulations and Proposed Protocols to Protect Surface Water Quality and Subsurface Infrastructure is Vague and Inadequate

In the most general terms possible, DEC proposes that the “DSGEIS will evaluate the sufficiency of existing protocols and regulations for protecting New York City’s subsurface water supply infrastructure from potential impacts related to gas well drilling and hydraulic fracturing.”⁵⁷

- *The Final Scope must expand upon this generalized statement.*

The New York City Department of Environmental Protection (DEP) proposes a “drilling exclusion zone within a 1-mile buffer to all New York City water supply infrastructure including reservoirs, tunnels, shafts, and other appurtenances,”⁵⁸ yet DEC proposes only that the DSGEIS “will address the need for any exclusion zone, additional environmental review and additional special permit conditions.”⁵⁹ In fact, DEC appears to suggest that existing protocols and regulations for protecting the City’s surface water reservoirs may be sufficient considering “the fact that New York City controls a substantial amount of the acreage surrounding the reservoirs through fee ownership or conservation easements so that drilling would not occur on such acreage without the City’s permission.”⁶⁰

- *The DSGEIS must provide a comprehensive discussion of this issue.*
- *The DSGEIS must conduct a comprehensive analysis on impacts to water supply infrastructure.*
- *The Final Scope should detail potential impacts that hydraulic fracturing may have on New York City’s water supply infrastructure, including already-existing problems within the system such as the leak in the Delaware Aqueduct.*

⁵⁷ See DSGEIS, at 31.

⁵⁸ See *id.*

⁵⁹ See *id.*

⁶⁰ *Id.*

Riverkeeper first detailed the extent of this leak in a report nearly a decade ago. While recent reports indicate that New York City is taking measures to address the leak, currently estimated at 35 million gallons a day of clean drinking water, the problem has yet to be fixed, and continues to pose severe impacts not only to the 9 million people who depend on this water, but also to residents of local communities now plagued by sinkholes, contaminated drinking water wells, and flooded basements that have resulted from this leak.

- ***Potential impacts of gas drilling in areas within proximity to the existing leak, or in proximity to any other water supply tunnels and aqueducts, need to be fully addressed in the Final Scope.***

As discussed below, neither the existing 50-foot-wide protective corridor surrounding any “public stream, river, other body of water,”⁶¹ nor the 1,000-foot-wide protective corridor surrounding a water tunnel or aqueduct,⁶² nor the City’s proposed one-mile-wide protective corridor surrounding reservoirs and water delivery infrastructure, as presented in the Draft Scope, are adequate to ensure that the DSGEIS will address the potential adverse impacts to surface and groundwater supplies in the WOH watersheds.

- ***For example, is the 50-foot-wide protective corridor sufficient to protect sensitive Catskill streams from surface water runoff?***
- ***Did the previous analysis take into account that all surface water in a watershed flows downstream and into a reservoir?***
- ***Does this 50-foot-wide corridor take into account the loss of trees and vegetation needed to filter and absorb surface water in the New York City Watershed?***
- ***Is the 1,000-foot-wide protective corridor surrounding the leaking Delaware Aqueduct sufficient to protect this invaluable resource?***
- ***How will deep hydraulic fracturing impact the aqueducts and tunnels?***
- ***How does the proposed 1-mile buffer protect a watershed when all surface water flows downhill, regardless of whether it is 1-mile or 1-mile and 3 feet away from a reservoir?***
- ***Do any of these proposed buffers take into account how a watershed functions?***
- ***Aside from being round numbers, on what basis were they determined?***
- ***All of these issues, and many more, need to be properly addressed.***

For the following reasons, the Draft Scope is deficient and must be revised to address specific issues critical to the protection of New York City Watershed lands, water supplies, and subsurface infrastructure.

⁶¹ See *id.*, at 28.

⁶² See *id.*, at 30.

E. The Draft Scope Fails to Address the Potential Impacts of Surface and Groundwater Contamination by Fracking Chemicals in the New York City Watershed.

The New York City Watershed requires a higher standard of review on this issue because the New York City Watershed is an *unfiltered water* supply. A recent analysis of the chemicals used in natural gas production in Colorado explored the health effects of the products and chemicals used in well operations.⁶³ The study researched human health impacts of the identified compounds and categorized them based on standard use in government toxicological literature as follows:

- The 215 recovered products contained at least 278 chemical compounds.
- 93% of the products have one or more adverse health effects. Of these, 19% have one to three possible health effects, and 81% have 4-14 possible health effects; 25 products have 14 adverse health effects.
- Upon plotting the percent of chemicals in each health category, a pattern emerged of the possible health effects for the 278 chemicals. The four categories with the highest exposure risk were (1) eyes, skin, and sensory organs; (2) respiratory system; (3) gastrointestinal tract and liver; and (4) brain and nervous system.
- 124 compounds were water soluble.
- 73 compounds were volatile.

In addition, the results of a chemical analysis of the residues from six waste pits in a New Mexico gas drilling operation detected 51 toxic compounds, and 43 of the 51 compounds detected in the pits were not listed as chemicals being used during natural gas operations. Furthermore, 13 of the chemicals were detected at concentrations above regulated state and federal safety levels. The study also revealed that 84% of the compounds detected in the pits are on the CERCLA superfund list.⁶⁴

Common fracking fluids and additives include liquid carbon dioxide, liquid nitrogen, crude oil, kerosene, and various lubricants, friction reducers, gels, surfactants, defoamers, biocides, and polymers.⁶⁵ These compounds include carcinogens, volatile organic compounds (VOCs) and endocrine disruptors; all have the potential to reach surface and groundwater supplies through accidental spills, incidental fracturing, fluid migration, and/or stormwater runoff.

⁶³ See THE ENDOCRINE DISRUPTION EXCHANGE, ANALYSIS OF CHEMICALS USED IN NATURAL GAS PRODUCTION: COLORADO (2008), available at: <http://www.endocrinedisruption.com>.

⁶⁴ See Written testimony of Theo Colborn, PhD, President of TEDX, Paonia, Colorado before the House Committee on Oversight and Government Reform, hearing on The Applicability of Federal Requirements to Protect Public Health and the Environment from Oil and Gas Development, October 31, 2007, available at: http://s3.amazonaws.com/publicassets/natural_gas/colborn_testimony_071025.pdf.

⁶⁵ Swanston, S., et al, OVERSIGHT: NATURAL GAS DRILLING IN THE NEW YORK CITY WATERSHED, New York City Council Committee on Environmental Protection, (September 10, 2008), at 8, available at: http://www.nycouncil.info/html/committees/committee_matters.cfm?committee_id=47<sbdkkey=10.

- *For these reasons, the Final Scope must address the potential environmental impacts and human health risks of surface and groundwater contamination by fracking chemicals.*

F. The Draft Scope Fails to Address Proposed Impacts to Water Quantity and Quality

1. Water Quantity

The Department's existing GEIS does not study water quantity impacts with respect to Catskill streams and the New York City Watershed. It takes between three and five million gallons of water to frack a well in the Marcellus Shale.⁶⁶ Amounts vary, depending on equipment, site specific conditions and the depth of the well (Marcellus shale wells are expected to be 6,000 to 8,000 feet deep).

- *The DSGEIS must explain the extent to which proposed operations will be using multi-stage fracturing techniques, thus requiring millions gallons of water.*

The water is either drawn from a nearby source (such as a well or stream) or hauled in by hundreds of trucks. The use is usually classified as consumptive and depletive because the water is typically not returned. Potential impacts include aquifer depletion, stream flow depletion and disruption, interference with hydroperiod flow to wetlands and other water-dependent ecosystems. In turn, aquatic and terrestrial flora and fauna can be impacted, and drinking water supplies can be depleted. In addition to the volume of water used in fracking, some water is produced by the gas well when fluids and gas rise to the surface, transporting water from the aquifer. This water is considered a depletive loss.

- *The Final Scope must require an analysis of instant, seasonal, and long-term impacts to surface and subsurface water quantities resulting from drilling operations.*

The vast amount of water needed for hydraulic fracturing may also impact fish, flora and fauna in and around streams feeding the New York City Watershed. In Pennsylvania, increased mortality among young fish is being traced to heavy water demands from natural gas drilling operations on streams and rivers, like the Susquehanna. Recently, two drilling operations in Lycoming County, PA were shut down after Pennsylvania Department of Environmental Protection discovered that they were drawing large amounts of water from small streams, a violation of Pennsylvania's Clean Streams Law.⁶⁷ In western Pennsylvania, which doesn't have the same water regulations as the rest of the state, gas drilling companies are regularly extracting millions of gallons of water from public surface waters each day. Experts worry that such unchecked water usage may have adverse impacts on local water supplies.⁶⁸

⁶⁶ *See id.*

⁶⁷ Bob Frye, "Drilling detrimental to rivers, streams," *Pittsburgh Tribune-Review*, November 9, 2008, available at: http://www.pittsburghlive.com/x/pittsburghtrib/sports/outdoors/s_597532.html.

⁶⁸ Jim Parson, "Western Pa. Streams Emptied By Natural Gas Drilling," *The Pittsburgh Channel*, November 17, 2008, available at: <http://www.thepittsburghchannel.com/print/17973811/detail.html>.

In New York, the increased water usage could dangerously deplete surface and groundwater supplies. As Trout Unlimited has pointed out, New York's water supply is already under stress and a number of fish species are in danger as a result. Increasing water usage for hydraulic fracturing, especially during low flow months in the late summer and early fall, could be detrimental to some water supplies and ecosystems.⁶⁹ It is important to keep in mind that gas drilling operations usually extract all the water they need to fracture a well before they begin fracturing. Thus, drilling companies might extract up to 5 million gallons at a time from local water bodies, rather than staggering their withdrawals over longer periods of times. Such large withdrawals may be far more threatening to the environment than the same amount withdrawn over a period of weeks or months.

- *The Final Scope must require the DSGEIS to study all of these water quantity issues.*

2. Water Quality

The drilling and fracking processes introduce chemical compounds into the well and also disturb, distribute and bring to the surface chemicals from various rock formations, such as normally occurring radioactive materials or NORMS, which do occur in the New York City Watershed region.⁷⁰ It is estimated that 20%-40% of the fracking fluids and the chemicals they contain can remain underground and can spread into deep aquifers.⁷¹ How and where used fracking water will be disposed is unclear.

- *Reflected in the Final Scope, the DSGEIS must (1) list specific mitigation measures to control chemical contamination of aquifers and surface waters; and (2) identify practices that will be implemented to dispose of produced water.*

G. The Draft Scope Fails to Discuss Specific Mitigation Practices to Control Stormwater Runoff

1. Erosion and Sediment Controls

The Draft Scope mentions in passing that “[e]rosion and sedimentation control measures deemed appropriate by the Regional Minerals Manager must be maintained at all well sites, regardless of size” and “[t]he determination of what is needed is based upon the field inspector’s pre-permit site visit...”⁷² Nowhere does the Draft Scope identify any specific Best Management Practices (BMPs) relating to erosion and sediment controls to be discussed in the DSGEIS.

⁶⁹ Trout Unlimited, “Tapped Out: New York’s Water Woes,” available at: <http://www.tu.org/site/c.kkLRJ7MSKtH/b.4496459/> (last visited: December 11, 2008).

⁷⁰ Sumi, I., SHALE GAS: FOCUS ON THE MARCELLUS SHALE, Oil and Gas Accountability Project, Earthworks, (2008), 13-14, available at: <http://www.earthworksaction.org/marcellusshale08.cfm>.

⁷¹ See *id.*, at 10; Swanston, *supra*, note 63.

⁷² See DSGEIS, at 29.

Industrial gas drilling requires forest clearing, road construction, stream crossings, and the construction of drilling pads capable of accommodating several wells. Hundreds of tanker trucks are required to haul in water and remove wastewater. In addition, a web of pipelines is required to transport the harvested gas. The gas industry proposes land disturbances of this magnitude in a watershed infamous for heavy flooding and where all surface runoff flows into New York City's unfiltered drinking water supply.

- *Therefore, the Final Scope must require that the SDGEIS discusses specific erosion and sediment controls for each of the aforementioned land disturbance activities.*
- *Final Scope should require a discussion of potential impacts to streams and wetlands that may result from the construction of additional pipelines. These impacts should also be addressed in the SDGEIS's cumulative impacts analysis.*

2. Construction Sequencing and Phasing

Because access to drilling sites requires forest clearing, cutting, grading, grubbing, topsoil removal, and bridge and road construction, these activities must be clearly and properly sequenced to prevent stormwater discharges to receiving waters in the New York City Watershed.

- *Although a well site may be considered a "small construction site,"⁷³ the DSGEIS must identify the sequence of proposed construction activities and integrate them with the necessary erosion and sediment controls to capture and treat stormwater runoff.*
- *In addition, where construction activities are proposed on steep slopes, clay soils, or in proximity to streams, reservoirs or wetlands, phasing may be necessary to protect surface water resources. Under such circumstances, the DSGEIS must also include a discussion of mitigation measures and BMPs to prevent runoff contamination of drinking water supplies.*

H. The Draft Scope Fails to Provide a Cost/Benefit Analysis that Would Justify Drilling In the New York City Watershed

Industry representatives who have expressed interest in applying for gas drilling permits in New York State's Marcellus shale formation have indicated through conversations with Riverkeeper and other environmental organizations that (1) the extent of gas-bearing shale does not extend as far into the New York City Watershed as indicated on DEC's map,⁷⁴ and (2) the portion of the shale formation that does intrude on the New York City Watershed is shallow and not likely to contain enough gas to be cost-effectively harvested.

⁷³ See *id.*, at 17.

⁷⁴

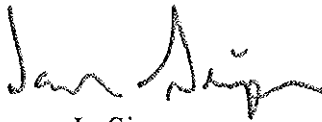
- *The DSGEIS must include an analysis of the economic value of the ecosystem services that would be lost or destroyed through industrial gas drilling in the New York City Watershed.*

Trees, forests, wetlands, water quantity, and other aspects of the New York City Watershed ecosystem all perform vital functions and filter water naturally, rather than forcing New York City to build a filtration plant. The value of these lost services should be calculated on a cumulative basis, not simply an individual basis.

- *If, as industry representatives have indicated, there is little if any cost-effectively harvestable gas in the New York City portion of the Marcellus shale formation, then the DSGEIS should consider whether drilling in the sensitive New York City Watershed is justified via a cost/benefit analysis.*

We appreciate the opportunity to submit these comments and look forward to working with you throughout this process.

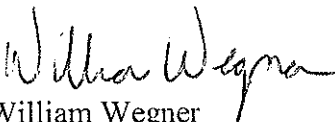
Very Truly Yours,



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