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December 16, 2011

ATTN: dSGEIS Comments
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

RE: Comments on the Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program (September 2011), Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing in the Marcellus Shale and Other Low-Permeability Gas Reservoirs

Citizens' Environmental Coalition represents thousands of individuals and organizations across New York State. Our review of the factual and scientific evidence associated with hydraulic fracturing elsewhere in the nation tells us that this proposed plan to allow over 1000 wells to be drilled annually is a recipe for widespread damage to the environment, public health, and the economy.

Given the clear declaration of policy contained in our state's Environmental Conservation Law, we believe this new technology; High Volume- Hydrofracking cannot meet these standards:

§ 1-0101. Declaration of policy.

1. The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well being.

2. It shall further be the policy of the state to improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and the concerned individual, and to develop and manage the basic resources of water, land, and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.

It is the state's policy to conserve, improve and protect its natural resources and to prevent, abate and control pollution to enhance the health, safety and welfare of the people of this state. The policy goes further to manage our basic resources of water, land and air so the state may fulfill its responsibility as trustee of the environment for present and future generations. We would like the final EIS to explain to us how the proposal in the draft revised SGEIS is consistent with these provisions of NY's Environmental Conservation Law.

We found no consistency; therefore, Citizens' Environmental Coalition is unalterably opposed to this proposal to allow the use of this new technology “High Volume Hydraulic Fracturing” in the state.

The revised draft SGEIS is terribly inadequate, failing to identify many significant environmental, health, social and economic impacts, and if impacts are identified, failing to study them. The next step in a SEQRA review should be careful consideration of Alternatives to the Action proposed, particularly where the impacts have a high potential for harm. Alternatives were not carefully considered but those identified were quickly dismissed without any substantial analysis. Mitigation should only be proposed for actions deemed to have substantial benefits in contrast to adverse impacts and for which there are no acceptable alternatives. This dSGEIS jumped all too quickly to mitigation options without fully analyzing impacts in a large number of areas—thus thwarting the intent of SEQRA.

As we discuss the individual problems with the revised draft SGEIS, we will recommend additional SEQRA analyses and improvements to the proposed plan for widespread drilling upon which the plan rests. This is necessary to document how biased and inadequate the proposed plan is. However, nothing we say about the individual issues should ever be interpreted as support for the state to move forward with High Volume Hydraulic Fracturing in any form other than very small scale pilot projects that can be very closely monitored, enabling the Department to fully understand the environmental impacts associated with this new technology and conduct adequate oversight and enforcement. At this time we believe that high volume hydraulic fracturing cannot be done safely, based on the record of environmental damage elsewhere and given the extremely limited resources of the state DEC.

Everything about this proposal and the Generic Draft Environmental Impact Statement has been extraordinary. As a result we are endeavoring to first address some of the broad overarching issues that are problematic before providing specific detailed comments. Thus CEC’s comments will be in two parts: Part One will address key overarching issues and Part Two will address specific detailed issues. Part Two of our comment will be submitted in January.

Many of these overarching issues in Part One are essential requirements of SEQRA analyses. Most are so fundamental in nature that they should have been extensively discussed in the dSGEIS, but were not addressed or only given superficial treatment. As a result the collective

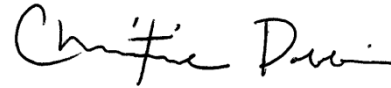
documents representing the revised draft SGEIS cannot provide support for moving forward with high volume hydraulic fracturing.

Part One of our Comments is attached.

Sincerely,



Barbara J. Warren
Executive Director



Christine Dobbins
Program Associate

CC: Attorney General Eric Schneiderman
Senator Mark Grisanti, Chair of Senate EnCon Committee
Assemblyman Robert Sweeney, Chair of Assembly EnCon Committee

Part I Overarching Issues

“Hydrofracking” and its meaning

The public, including environmental and civic groups, use the term hydrofracking in the broad sense to refer to the new technology that involves vertical and horizontal drilling, fracturing of shale rock, gas recovery, fluids and solid wastes, and all associated equipment and processes. The public has learned a great deal about the scale of the process and the enormous potential for environmental impacts across the entire lifecycle of the gas industry’s plan for recovering natural gas from the Marcellus and Utica Shales. This is primarily because the gas industry has been actively engaged in drilling in shale formations in other states and leaving extensive health and environmental impacts in its wake. It is and was appropriate to use one term to describe industry’s plan and to begin to educate the public about the potential environmental impacts of the entire process.

Naturally, industry would prefer to define hydraulic fracturing as a technique that has been used for a long time with vertical wells. Industry also prefers a narrower definition of hydraulic fracturing so it can claim that hydraulic fracturing was not responsible for any environmental damages or adverse consequences. For example, groundwater contamination resulted from cracked drill casing, not from the specific process of hydraulic fracturing. Just as any manufacturing involves multiple individual processes, recovery of natural gas involves multiple individual processes that are linked to each other. The fact that groundwater contamination resulted from cracked drill casing or improperly cemented casing does not provide the guarantees that the public needs and the result—contaminated groundwater—is what is important, not which individual process component caused it.

A new report released by the EPA has linked hydrofracking operations to severe groundwater contamination in Wyoming. This study, which was not available until after the dSGEIS was released must be analyzed and adequately taken into account when considering public health and environmental damages that could result from fracking in New York State.¹

Investigations in Texas revealed that 100 wells in Wise County “didn’t have enough surface casing to protect groundwater and that records about the surface casing had been falsified.”² We have provided these Reports as recommended reading for the DEC. Such massive fraud also points to the unacceptability of allowing this industry to regulate itself. Reliance solely on well and casing design drawings cannot be adequate where falsification of permit materials has occurred.

We maintain that once a company begins physical operations in the field through completion of gas recovery and final closure of a well or wells, the company should be responsible and liable for any damages or adverse outcomes. Thus the public perspective of the term hydraulic

fracturing is the most appropriate one from a regulatory perspective. This public view is also supported by the Shale Gas Subcommittee of the Secretary of Energy.

At the request of President Obama, the Secretary of Energy formed a Subcommittee to review issues and problems surrounding shale gas production. Like the public, the Subcommittee has adopted a comprehensive view of the entire process.

“The Subcommittee has considered the safety and environmental impact of all steps in shale gas production, not just hydraulic fracturing. Shale gas production consists of several steps, from well design and surface preparation, to drilling and cementing steel casing at multiple stages of well construction, to well completion. The various steps include perforation, water and fracturing fluid preparation, multistage hydraulic fracturing, collection and handling of flow-back and produced water, gas collection, processing and pipeline transmission, and site remediation. Each of these activities has safety and environmental risks that are addressed by operators and by regulators in different ways according to location. In light of these processes, the Subcommittee interprets its charge to assess this entire system, rather than just hydraulic fracturing.”³

- We recommend that the DEC adopt a similar system’s view of the process to ensure that gas companies are responsible and liable for the entire life cycle associated with gas recovery from shale formations. This would include long term maintenance and replacement of plugs for wells provided through financial and other mechanisms for long term aquifer protection.

Personnel & Financial Resources of DEC

The Department has suffered enormous budget cutbacks for over a decade. This has reduced the Agency’s ability to effectively protect the environment, conduct oversight and enforce the state’s environmental laws and regulations.

Staffing is currently severely inadequate for existing environmental programs. Yet the State is planning for a massive environmental assault on natural resources of the state that our environmental conservation law requires be preserved, conserved and protected for future generations. Thousands of new permits will require permit and site-specific environmental reviews, oversight and compliance activities, rulemaking, comprehensive air and water monitoring as well as enforcement. In the absence of adequate resources for staffing and agency operations, what is clearly being proposed is industry self-regulation. The DEC is even planning to issue permits prior to the finalization of regulations. In 2009, the public provided extensive comments on the issue of adequate DEC resources given the disproportionate budget cuts this Agency has suffered over more than a decade. A recent Associated Press article, Nov. 26th, 2011, covered the impact of budget cuts on state environmental agencies. “This is a silent train wreck that's happening,” said David Hess, former secretary of the Pennsylvania Department of Environmental Protection, which is now operating under 1994 funding levels. “What these cuts do is cut the capacity and the ability of environmental agencies to do their jobs.”⁴ Pennsylvania

has suffered from numerous adverse environmental impacts associated with hydraulic fracturing and NY consulted only with PA DEP officials in preparing the dSGEIS.

The failure to address this significant issue of public concern with details about the staff and resources planned to effectively manage a program and protect the environment and public health in this revised draft is completely unacceptable. We phoned DEC to find out where this topic might be addressed in the dSGEIS and learned that many members of the public had been calling with this same question. We learned that the dSGEIS did not address the resources for this critically important regulatory program. For us, this clearly demonstrates that DEC has been conferring primarily with the gas industry and ignoring public comments.

- Self- regulation of this industry is not an acceptable option. A detailed analysis of the full range of work tasks and professional staff that will be needed to sufficiently regulate this industry must be completed. It will not be sufficient to just state “we are adding 100 positions” in the absence of a supporting analysis.

Industry consultants were hired to prepare the dSGEIS

Normal practice is for the proponent of a project to prepare the EIS and to pay for it. Yet for some reason it appears that state taxpayers paid over \$200,000 for this dSGEIS document to be prepared by consultants who also simultaneously represent major oil and gas industries. As an EIS is being prepared there are often several rounds of Department input to ensure that there has been a thorough look at all the potential environmental impacts. We would like an answer to when the first draft of this draft revised dSGEIS was submitted to the Department and how many rounds of comments the Department provided to these consultants before this terribly deficient document was released to the public.

We have found the draft revised dSGEIS to be completely inadequate because important environmental, social and economic impacts have not been covered, environmental damage in other states and frank adverse health impacts were not mentioned, and key sources of information were not referenced. We find the dSGEIS to be extremely biased in favor of industry.

- Such strong industry bias cannot form the foundation for such a broad based program with strong potential for significant harm.

No Findings Statement was prepared and included with the dSGEIS

An EIS is prepared as a study and disclosure of environmental impacts associated with a project. Following the required “hard look” or study under SEQRA, the department should have prepared its conclusions related to the study for the public to review and comment on. Instead the Department failed to provide its conclusions and is proposing to provide them as part of the Final GEIS whenever it is issued. We believe it is likely that the Department was under pressure to

release the dSGEIS without its normal thorough review of industry proposed projects. However, this extraordinary procedure means that the public will have no opportunity to comment on the Department's conclusions—whether erroneous or unsupported by the dSGEIS—because there will be no additional public comment period.

- We believe that because DEC staff are professionals dedicated to environmental protection, they are conflicted about issuing a findings statement inconsistent with environmental protection and the mission of the Agency.

There was No Response to Earlier Comments provided with the revised draft dSGEIS

Ordinarily as part of SEQRA review, an agency preparing an EIS will prepare a document which addresses the comments received. It is clear that this hydraulic fracturing EIS is an extraordinary proposal both because of its broad scope and because of the potential for serious environmental impacts. As a result there is an enormous amount of public interest, which was expressed in public hearings and in writing to the DEC. Unfortunately, there was no attempt to substantively address the comments received in the previous round. We were told that we could see where revisions have been made in the document. Frankly we cannot find changes that reflect important issues raised by the public. We have no idea why the issues raised by the public were not explored further, why recommendations were not accepted or acted on. Specifically addressing public comments would likely have resulted in a much improved dSGEIS with far more thought given to the environmental issues raised, their impacts, the alternatives and mitigation options. Particularly egregious in this regard is the fact that the public repeatedly addressed the limited staff resources at DEC and the fact that no regulatory plan had been provided that revealed the fees that would be charged to the industry for horizontal drilling (fees are currently based on depth in vertical drilling) in order to provide proper oversight and enforcement with this industry. This version of the dSGEIS contains no discussion of this major, significant issue. Responding to public comments might also have actually resulted in addressing the federal EPA's important comments related to ozone. (We provide more detail on ozone when we submit Part Two of our comments.)

- We recommend that the final SGEIS address all the missing analyses of impacts as well as state and local resources needs associated with this proposal. Part of this task requires that all comments be carefully considered, not just those of industry.

Power & Influence of the Oil and Gas Industry

The industry we are talking about here is huge, powerful and rich. This industry is so powerful that they have extracted not just natural resources, but federal subsidies and extraordinary political power by buying members of Congress. This industry has invested “more than \$747 million as a part of a 10-year lobbying and political spending campaign to persuade federal authorities to ignore the dangers of hydraulic fracturing.”⁵ Additionally, they have managed to

exempt themselves from a large number of federal environmental laws. This is the industry that is now knocking at New York's door. Based on this dSGEIS New York appears to be opening the door wide and saying "welcome", without extracting appropriate fees for the natural resources New Yorkers collectively own, without asking important questions, and without ensuring an adequate level of protection from the harm, that has been demonstrated and documented elsewhere in the country.

Not only does the industry have an upper hand legislatively, it also has been able to avoid responsibility for instances of contamination in the courts. In order for a landowner to receive compensation from contamination due to hydrofracking operations the landowner would have to prove that the gas driller contaminated their land or water and that the driller did so through negligence. Because the proposed regulations do not do enough to protect the public from spills and pollution, landowners can only rely on costly litigation to mitigate industry accidents and subsequent contamination.

Justice should not require insurmountable hurdles and come with such a high price tag.

Placing the burden of proof on landowners also enables the industry to assert that the contamination could have resulted from "natural occurrences" and require landowners to "prove" both the source and migratory pathway of contamination. When instances of methane or chemical contamination occur the industry should prove that it was not at fault rather the landowner bearing the burden of proof.

As a reminder, deregulation of the banks and financial industry is believed to be responsible for the economic crisis still impacting the nation and the world. The potential natural resource damage associated with giving the natural gas industry free reign under a clearly deregulatory framework could be quite similarly significant for the state of New York and its people.

There was Almost Complete Reliance on Industry Data & Documents

The industry described above is the one that provided the data and information in order to produce the dSGEIS. The Agency acknowledges this in the document, with only supplementation from Pennsylvania DEP officials. We are talking here about a newer technology, horizontal drilling and high volume hydraulic fracturing. Newer technologies and techniques always come with risks as knowledge and experience are pushed to their limits. Following the BP disaster, the nation was stunned to hear the testimony of industry executives before Congress regarding deep water drilling and how risky and stretched to the limits of technology, deep drilling is.

Relying solely on industry information for the future will mean that DEC staff are severely ill-informed and therefore handicapped as regulators. The bias present in the dSGEIS, if not corrected, will carry forward for years guaranteeing that the mandate in NY's Environmental

Conservation Law to protect the environment for the public and future generations will not apply to the gas industry.

- We recommend using a broader reading list, in which industry is not the primary source. There have been many investigative reports by media, government agencies, and independent parties as well as incident reports related to untoward events. To that end we are providing a number of documents to be included as part of the record, to be read and used to analyze environmental and health impacts.

Purpose & Need for the Project

The dSGEIS defines the proposed action in an extraordinary way—as the issuance of permits related to high volume hydraulic fracturing. Permits are needed for most kinds of industrial activity so it is a very bizarre construction to suggest that the proposed action is permitting. This definition inappropriately narrows the central question: what is the purpose and need for high volume hydraulic fracturing in New York? The question should not be: What is the purpose of permitting?

In the past this project would be defined as an industry project to drill for natural gas using hydraulic fracturing with large fluid volumes and vertical and horizontal drilling.

If one reads the US Energy Information Agency 2009 report (the most recent) it is pretty clear that there is no need for additional natural gas production now, as many states are currently involved in natural gas drilling and there are abundant supplies which have resulted in dramatically lower prices. As described in the US EIA 2009 report, (natural gas proven reserves have increased every year for the last 9 years. Twenty states are associated with these newer gas reserves in shale formations. Higher production of natural gas coupled with a warming climate have resulted in dramatically lower prices—a monthly average high of \$11.32 per Mcf at the wellhead in 2008, to a high of \$5.15 and a low of \$2.92 (monthly averages) in 2009.⁶ In Western States there is so much natural gas at drilling sites, that companies are frequently flaring rather than recovering gas that could be recovered.

While DEC's industry consultants may have cleverly sought to evade the primary question associated with the review of any proposed project, much less one that is so massive in scope, the substitution of "issuance of permits" is simply unwarranted and unacceptable for anyone with even a casual understanding of SEQRA.

Complicating the essential question of need for the project is the gas industry itself, which seeks to use natural gas primarily as a feedstock for the production of higher value materials, such as plastics. The plastics industry has been particularly unaccountable in shifting the burden of end of life management of plastics and its costs to local governments and individuals. The recycling of secondary plastics materials into new products is at a particularly abysmal rate due to the industry's unwillingness to use anything other than virgin feedstock. The use of fossil fuels to

produce single use plastics that become a burden to society to dispose of fully describes an unsustainable situation that needs correction. The oil and gas industries are intimately connected to plastics production.

The Department has in fact recommended product stewardship initiatives in the new State Solid Waste Management Plan, “Beyond Waste.” We have suggested that the local burden of ever increasing plastics, and their associated toxic properties, make them a prime candidate for stewardship proposals.

Benefits for most New Yorkers are limited.

The need for the expansion of gas drilling to include horizontal/directional drilling and high volume fracking is questionable based on the above discussion. The dSGEIS never actually provides an adequate discussion of the purpose or need for the project and the same is true for the benefits— which the dSGEIS has identified as only economic. Naturally landowners willing to allow drilling will obtain the largest economic benefit. Benefits to other parties are illusory as we discuss later under Economic Costs.

The dSGEIS discusses the potential economic benefits of hydrofracking in terms of employment, income levels, and personal income tax receipts (Socio-Economic Impact Analysis). However, there is little direct income from the industry to the state. “Currently, no specific state tax is levied on the extraction of natural gas in New York State; however, the state government receives revenues from the natural gas industry and from natural gas development primarily through income and sales taxes. The state assesses personal income tax on wages earned by workers in the industry, and income received by individuals as royalty payments and lease payments from natural gas operators” (dSGEIS, p. 2-92). However, “Revenues generated from sales and use taxes would also register an increase as industry purchased the materials needed to develop these natural gas reserves that are not exempt from state and local sales tax. However, *many of the materials needed to construct these wells would be tax-exempt*, including such things as piping, drill rigs, service rigs, vehicles, tools and supplies, pollution control equipment, and services to real property” (SE Impact Analysis, 4-116).

In Chapter 1, the DEC references the Environmental Conservation Law stating, “In addition to protecting the environment and public health and safety, the Department is also required by Article 23 of the ECL (ECL 23) to prevent waste of the State’s oil and gas resources, to provide for greater ultimate recovery of the resources, and to protect correlative rights.” (Section 1.2 of dSGEIS and p. 1-3).

The current action is proposing to give away the state’s gas resources, without collecting appropriate royalties or fees. Given the national picture of production and increased reserves, the state could be moving forward with a program, guaranteed to waste our existing resources.

Coupled with the accumulating evidence of significant health and safety harm associated with this industry and the new technologies, it might make more sense to proceed slowly to permit a few private projects that could be adequately and comprehensively monitored by the Department to prevent harm. At the same time New York's gas reserves would be protected and reserved for future use, when other national supplies run out, gas prices rise again, and more experience is gained with the new technology. This would also be consistent with Article 23.

An alternate view is that the current plan ensures the wasting of our gas resources and setting the stage to waste our water resources.

To us proceeding slowly would mean 5 projects in the first year, 10 in the second—but only if adequate resources for comprehensive monitoring and oversight are made available. We cannot even envision a DEC capable of handling 100 projects a year, much less over 1000. Hiring and training new personnel takes time and a learning curve and the DEC lost many of its most experienced staff recently. If this kind of gas drilling cannot be done right, it should not be done at all. Fewer projects mean that NY's gas reserves and water resources are protected for future generations.

Job creation overestimated

Additionally, the dSGEIS does not accurately estimate job creation resulting from hydrofracking operations. The dSGEIS asserts that drilling in NYS is “expected to generate between 13,491 and 53,969 direct and indirect jobs” for New Yorkers (dSGEIS pp. 6-215). This estimate was based on data from the Independent Oil & Gas Association of New York, an organization closely tied to the gas drilling industry. A November 2011 study conducted by Food and Water Watch projected a mere 6,656 total jobs by 2018, the study goes on to suggest that even their estimate is “overly optimistic”. The report goes on to affirm that even if the 6,656 jobs were to become a reality, “it would be insignificant next to overall employment in New York State”.⁷ The dSGEIS, which was released before the Food and Water Watch report must be revised to including the findings from this report. Additionally, the dSGEIS does not take into account the negative impact hydrofracking would have on employment in other sectors like agriculture. Therefore their job creation estimates are even more skewed.

Property owners engaged in leasing have not been adequately protected by State actions.

Theoretically under the economic analysis in the dSGEIS property owners will increase their incomes and the taxes they pay to the state. However, we are learning that property owners who have leased their property to gas companies for drilling may not have been fully informed about the potential risks associated with high volume hydraulic fracturing. In fact shareholders in gas companies may have been more fully informed than landowners. Deceptive business practices on the part of the gas drilling industry are highlighted in a report conducted by Environmental Working Group called Drilling Doublespeak.⁸ This report showcases experiences from landowners who leased their land to gas drilling companies in Maryland, Ohio, Pennsylvania,

Virginia and New York. These case studies show how the industry has often neglected to disclose potential risks associated with gas drilling to landowners. It is important to note here that many of the landowners sought the help of lawyers when negotiating leases. However, many of the lawyers did not have experience with mineral leases and advised the landowners that the lease was “reasonable and straightforward”.⁹ Landowners have subsequently regretted signing the lease and have stated they would not lease again. The report even goes on to interview Joe Heath, general counsel for the Onondaga Nation, who states “I think 99 percent of lawyers in New York State would not be able to break apart a lease and understand all of the interconnected ramification and nuances”.¹⁰ This highlights how a lack of disclosure of drilling risks on the part of the industry in combination with a lack of professional experience on the part of independent lawyers who are supposed to represent landowners presents another complex problem for property owners. A problem that the dSGEIS does not discuss.

However, this dSGEIS does not really discuss potential impacts to landowners. Both the state DEC and the state DOH should be involved in ensuring that landowners were adequately informed about the health and environmental risks. Property owners are liable for contamination to their property under the presumption that the property owner should have controlled the use of the property. Liability for a Superfund type of cleanup could involve millions of dollars in economic costs and the loss of groundwater could impact many residents, even an entire town.

Recently a Texas company backed out of a \$45 million deal to buy a gas field in Wyoming from another company, EnCana following EPA’s announcement that benzene, a known human carcinogen, had been found in groundwater at 50 times the level deemed safe for drinking water. While we can surmise that there may be lots of reasons for the Texas company to back out of a deal the reality is that the property is no longer valued at \$45 million, it may even have a negative value associated with the costs of cleaning up contamination.¹¹

Actually, the dSGEIS also does not estimate potential losses in property value due to hydrofracking operations. While the Socio-economic Impact Analysis discusses the potential for small percentages of loss in property values other sources paint a different picture. For example, one study conducted by Earthworks highlighted a residence that experienced a 26% loss in property value and another property that was devalued by 75%.¹² These houses dropped in value by over \$260,000 and \$180,000, respectively¹³. The Socio-economic Impact Analysis does not adequately examine the available literature on hydrofracking’s impact to property values.

Banks have clearly weighted in on property values associated with drilling leases but the dSGEIS fails to mention the issue.

This growing concern was highlighted in an October 2011 article which was part of the NY Times “Drilling Down” series. This investigative reporting found that “Some banks have become reluctant to grant mortgages on properties leased for gas drilling. At least eight local or

national banks do not typically issue mortgages on such properties, lenders say”.¹⁴ These concerns were echoed by an article from the New York State Bar Journal.¹⁵ This means that homeowners may be unable to sell their properties, because new buyers cannot get a mortgage. The dSGEIS never examined this issue, which could extend to properties adjacent to drilling operations

- We recommend that the next version of the dSGEIS adequately address impacts to landowners including liability for Superfund clean-up, potential loss in property values, and the effects gas drilling could have on mortgages.

Economic Costs

A variety of economic costs from hydraulic fracturing in New York State are either absent from the dSGEIS completely or inadequately discussed. This is particularly concerning because this document and the accompanying documents go into great detail about prospective economic benefits, such as increases in employment and earnings. Furthermore, the Socio-economic Impact Analysis admits that hydrofracking operations would result in “significant negative fiscal impacts” to New York including costs to the state’s road system, costs due to accident clean up, monitoring, oversight, permitting, and enforcement, and cost to the Department of Health from water monitoring (SE Impact Analysis, p. 4-116). However, neither the dSGEIS nor the Socio-economic Impact Analysis attempts to quantify these expenses. The DEC is providing the public with only half of the story.

- We recommend that the next version of the dSGEIS include a comprehensive analysis that quantifies the “significant negative fiscal impacts” hydrofracking will have on NYS.

Truck Traffic, Bridge and Road degradation

Economic costs to the state and local governments due to increased truck traffic from hydrofracking operations are not estimated or adequately discussed. The SE Impact Analysis suggests that the largest burden of local roadway deterioration would fall on local governments, but it does not discuss where local governments would receive the funding needed to support local transportation needs (SE Impact Analysis, 3-59). The dSGEIS states that bridges with a condition rating of 6 or below would experience “accelerated deterioration and warrant replacement” (dSGEIS, p. 6- 313). Data from NYSDOT which shows that over 60% of the bridges in Sullivan County and over 70% of the bridges in Tompkins County are rated below a 6.¹⁶

- Therefore, we recommend that the costs of bridge repair or replacement be quantified in detail with a specific capital plan as to how and when these bridges will be addressed before any drilling plans move forward in the each county where bridges are significantly deteriorated.

- We also recommend that more analysis be done to quantify the impacts and costs associated with road maintenance and repair.

State & Local Costs associated with oversight and enforcement, as well as emergency response for accidents and spills.

Another economic cost that is absent from the dSGEIS is the cost of regulation and enforcement, accidents, spills, and the subsequent clean-up, emergency response, and follow-up by the Department of Health. The dSGEIS states that spills, leaks, and improper waste disposal are possibilities with hydrofracking and the Socio-economic Impact Analysis admits that “in order to protect human health and the environment New York State would have to spend substantial funds” (SE Impact Analysis, 4-116). However, an estimate of these “substantial funds” is never outlined within the document or accompanying documents.

The dSGEIS does not even address the state government costs likely associated with this proposal. Local government may be even worse off as a result of the severe economic crisis. This assessment fails to cover the true economic costs for local governments. Failure to analyze an impact means that alternative actions are not seriously considered and mitigations are not provided. However, the impacts from this action are still likely to occur if drilling moves forward. The costs to local governments could be even higher if property values decline as a result of contamination, leaving local governments with reduced tax revenues for their operations.

- These aforementioned concerns over economic costs relating to hydrofracking warrant further analysis and consideration. Accurate, informed cost estimates should be adequately outlined and discussed in the same detail as the potential economic benefits in order to provide the public with a comprehensive and more realistic evaluation of the economic impacts hydrofracking could have in New York State.

The potential costs of ozone, particularly to other NYS businesses, have not been analyzed.

NY is one of the states in the ozone transport region. Health based standards for ozone are likely to continue being tightened as the health effects of ozone are better understood. In this dSGEIS, DEC failed to adequately examine VOC and methane emissions which affect ozone, because the industry claimed that emissions would be negligible (more in Part 2 of our comments). Here we wish to highlight that federal and state measures to address ozone become increasingly stringent and affect more and more businesses as standards are violated. NY’s State Implementation Plan requires the maintenance of levels in current attainment areas and additional measures in non-attainment areas. DEC’s failure to use existing evidence related to VOC and methane emissions in other states for its own analysis of the NY situation and massive plans for new drilling has important implications for other businesses in the state. To the extent that DEC fails to even identify likely emissions and make plans for appropriate regulatory control of this industry, the

economic burden of gas industry emissions and ozone control will fall on other existing state businesses.

- DEC must analyze the effect of expected gas industry emissions on ozone levels using other sources other than industry claims. Then DEC must estimate the costs to other businesses if adequate controls are not placed on the gas industry.

Equal Protection under the Law

It should be a fundamental principle that all New Yorkers deserve equal protection under the law. However, New York State in this dSGEIS has confirmed that horizontal hydraulic fracturing is risky and determined that some New Yorkers should receive more protection than other New Yorkers. New York's proposed regulatory scheme fails to protect drinking water for all New Yorkers.

New York City & Syracuse Watersheds:

As the only unfiltered surface supplies of municipal water in the state, these watersheds are unique and deserve special protection to maintain their EPA Filtration Avoidance Determinations. Industrial activity, such as increased truck traffic, could impact these determinations. Losing this designation would mean New York City and Syracuse would be required to spend billions of dollars to build water filtration plants. Therefore, high-volume fracturing will be prohibited within these watersheds, within 4,000 feet of their boundaries and within 1,000 feet of NYC's subsurface water supply infrastructure unless approval is granted after site-specific review.¹⁷

Once again it is clear that the subject of the dSGEIS is focused primarily on economics alone. It is the billions of dollars related to water filtration that is being address by this mitigation.

First let's breakdown what is stated here. High volume fracturing will be prohibited:

- 1) Within the watersheds for NYC & Syracuse, which is larger than the water body or reservoir; and,
- 2) An additional 4000 feet extends beyond the boundary of the watershed;
- 3) Within 1000 feet of NYC's subsurface water supply infrastructure; (This is not an absolute prohibition since approval could occur after a site-specific review. This distance is clearly inappropriate since horizontal wells can go as far as 4000 feet, thus potentially impacting the water supply infrastructure.) and,
- 4) In Floodplains.

For the rest of the state:

- There is only a 2000 foot buffer from public drinking water supplies. We are not talking about the watershed, but the drinking water supplies. So the resultant buffer distance has been reduced by significantly more than half.
- For primary aquifers and private wells, the distance has been reduced to 500 feet—significantly less than 1/8 of the buffer distance provided to NYC and Syracuse watersheds.
- For principal aquifers, no distance at all is provided, but there is a requirement for a site-specific review. There is really no way of evaluating whether a site specific review will be more protective or less protective than 500 feet. If similar to this dSGEIS, a site specific review will not be protective and this does not reassure us.

DEC provides almost no justification for the decisions described here. How and why did DEC decide on these distances? Why should some urban areas receive more drinking water protection than others? The justification primarily provided – filtration avoidance—is questionable given the fact that two significant contaminants associated with hydrofracking and drinking water are methane and toxins. Neither of these contaminants can be adequately addressed by filtration. Since there is little discussion provided, we cannot see that a hard look for SEQRA purposes was involved. It is clear that there is no equal protection provided here. All of these decisions are arbitrary and capricious, and ones not likely to be made by a prudent person.

- The final EIS must substantially revise the program scheme based on scientific and factual information rather than just advancing a scheme that is completely unsupported by any analysis.

Alternatives

Chapter 9 provides the discussion of alternatives. However, it is grossly inadequate for SEQRA purposes. Despite thousands of pages for this dSGEIS, only 2 pages are dedicated to the No Action Alternative. DEC merely states: “If the no-action alternative were selected, none of the potential significant adverse impacts identified in this dSGEIS would occur. However, at the same time, none of the substantial economic benefits identified in Chapters 2 and 6 would occur either.”

In our view given the extraordinary documentation from numerous independent studies and investigation of adverse impacts, the NO ACTION Alternative and none of the potentially significant adverse impacts sounds like the best possible option for New York to take, particularly since the majority of people will not be realizing economic benefits but economic costs. In addition, this is the option that would allow the industry to mature and gain experience with new technology, hopefully learning from their mistakes so that any harm is less severe. At the same time regulators can learn from the mistakes Congress made in exempting this industry from so many important environmental laws and reinstitute an important regulatory framework.

New York can preserve the existing natural gas resources of the state for the future when natural gas supplies dwindle and become more valuable. Thus it is a mistake for DEC to assume that not utilizing this resource NOW, precludes any future use. The State legislature can also act to ensure adequate revenues will be accrued to the state for the extraction of natural gas and that a portion of these revenues are dedicated to the necessary regulatory structure to prevent permanent damage to the state's natural resources.

The dSGEIS has failed to provide any reasonably adequate economic analysis which includes the costs of environmental and health impacts. Rather the dSGEIS has focused exclusively on economic benefits, which disappear upon close examination. The Phased Permitting Approach has slightly more discussion at not quite 4 pages. However SEQRA requires a hard look at alternatives, something that did not occur in Chapter 9. There are many forms a Phased Alternative could take—limiting the number of permit applications in any given year, limiting the number per region, permitting only a few in the first few years so that comprehensive monitoring and study can be included. However, the Department all too quickly dismisses this option, saying both that phasing is already occurring because of the planned restrictions related to drinking water supplies; however these restrictions have nothing to do with phasing in the program. The Department next dismisses the phased alternative altogether saying that any limits on permits would be arbitrary and that DEC cannot predict development rates and patterns, and that development naturally occurs in phases anyway, therefore a formal phasing plan is not practical (if development occurs naturally in phases this would seem to make phasing more practical, but logic has not been utilized). The Department also briefly dismissed green alternatives, which we will take up later.

Once again SEQRA requires a hard look at alternatives. Simply choosing an alternative that is shot down in a few pages does not meet this requirement. Alternatives were clearly never seriously considered by the industry consultants writing this document for the Department. In addition, alternatives to the proposal should have been seriously considered *before* addressing mitigation.

The notable SEQRA failure here is compounded by the fact that adequate staffing and department resources was a consistent theme of earlier comments from the public and staffing and resources have not been addressed at all in this subsequent version of the EIS. Inadequate staff and resources to handle the expected thousands of permit applications, conduct thorough reviews, establish adequate permit conditions, and then conduct sufficient oversight and compliance activities is an environmental catastrophe in the making. All of the environmental damage discussed in this dSGEIS will be exacerbated by the current staffing situation at DEC.

“The Department recognizes that the risk of significant adverse impacts has the potential to increase if permits were issued in excess of the Department’s capacity to adequately police such development and enforce permit conditions. Accordingly, the Department proposes to limit the number of permits it issues to match the Department resources that are made available to review

and approve permit applications and to adequately inspect well pads and enforce permit conditions and regulations” (dSGEIS, p.9-7).

This very clear statement tells us we have reason to worry, but absent a real discussion of the staffing needs for this major program, we are concerned that DEC will be relying on the industry to self-regulate and permits will be handled like applications for library cards. In Chapter X the Department reviews incidents in Pennsylvania involving methane migration to water supplies in 5 townships in 2010, following a similar incident in 2009. DEC provides reassurance that it has required upgraded casing designs and that it will review the designs for well casings. However, the Earthworks report has documented that industry falsified records in Texas, so review of casing designs will not protect New Yorkers. CEC’s earlier comments in 2009 recommended a phased approach with comprehensive pilot studies and monitoring as a first phase.¹⁸

Recently the Department turned over hundreds of abandoned oil wells to the EPA for proper closure. Apparently the Department did not have the staff or financial resources to properly close these wells which cost approximately \$25,000 per well to close. If the DEC does not have the resources to deal with existing programs, how can it possibly contemplate a massive new program like the one discussed in this dSGEIS.

- The dSGEIS’ examination of alternatives is completely inadequate to meet the requirements for a “hard look” as required by SEQRA; the few pages devoted to alternatives demonstrate this. Alternatives to the Action are a priority for examination prior to considering mitigation.
- We recommend choosing the No Action Alternative.

Too Many Inconsistencies present in the dSGEIS

The dSGEIS should contain clear statements of the proposed requirements throughout the document, without variations. Unfortunately, we have found too many inconsistencies in this dSGEIS and in unexpected places. We think it is reasonable for the public to expect clear statements of the requirements proposed by the Department in this voluminous document and associated factsheets without multiple versions of what the Department is planning or such confused discussions that it is impossible to determine what is being proposed.

Impoundments & Reserve Pits

The various presentations related to impoundments and reserve or open pits are extremely confusing. Part of the problem stems from the Department’s decision not to address pits and impoundments in the dSGEIS.

“The Department was informed in September 2010 that operators would not routinely propose to store flowback water either in reserve pits on the wellpad or in centralized impoundments. Therefore, these practices are not addressed in this revised draft SGEIS and such impoundments would not be approved without site-specific environmental review.” (dSGEIS, p. 1-2)

Since the industry was not planning to use pits or impoundments, it would have been appropriate for the department to eliminate the use of these kinds of facilities. Instead the department has kept them in the document as an option for an unspecified purpose, since closed loop tanks are specified for flowback water and cuttings in some places in the dSGEIS. In other locations the Department still discusses the option of pits and impoundments, but specifies a site-specific review. If the Department wanted to consider pits and impoundments under any scenario the impacts should have been discussed in this dSGEIS. Part of the purpose of a generic EIS is to consider the cumulative environmental impacts. Given the poor quality of the dSGEIS, and the lack of attention to publicly expressed substantive issues, we have little confidence that site-specific environmental reviews at hundreds of sites offer any reasonable opportunity for effective public involvement in the future.

Open pits & impoundments allow highly toxic “produced water” to evaporate into the air, resulting in air pollution and potential groundwater pollution. Open pits for recovered fracking fluid and drilling waste contain toxic chemicals and naturally occurring radioactive material, which pose various health risks. Additional risks were made apparent after Hurricane Irene, when flooding ravaged parts of upstate New York, highlighting the potential for overflows of open pits. Geese and other animals could be subjected to persistent bioaccumulative toxins if open pit containment is utilized.

- We recommend the banning of open pits and impoundments.

Removal of a proposed mitigation

Chapter 9 where a discussion of alternatives was supposed to occur is not where we should find a plan to remove a proposed mitigation for drinking water. Under Section 9.2.3.3, the Department proposes that it may remove the 500 foot buffer requirement for primary aquifers 2 years after the first permit issuance. Similarly site –specific SEQRA determinations within 500 feet of principal aquifers could be eliminated after 2 years “based on actual experience and impacts associated with permit issuance outside these buffer zones.” DEC is proposing here that if no groundwater contamination has occurred within 2 years, not that the requirements seem to be effective, but that the requirements must be too stringent and need to be removed. There is no discussion of the opposite situation—where groundwater has become contaminated despite the 500 feet buffer. Would the Department increase the buffer distance?

It would appear from this presentation that DEC’s ultimate objective is the contamination of groundwater. This discussion of removing a mitigation would never have been produced by this environmental agency and is confirmatory evidence of the extent of industry influence on this document.

- The removal of a proposed mitigation does not belong in the alternatives chapter. We recommend complete removal of this suggestion and it cannot possibly be supported by any scientific or technical criteria.

General Permits

The Agency is proposing the use of General Permits for hydraulic fracturing operations in the State. However, at the same time the dSGEIS talks about addressing environmental impacts through the use of permit conditions. These two things are contradictory. General permits can be used for similar types of facilities or operations to ease the administrative burden when there are detailed explicit regulations governing these similar facilities or operations. In other words general permits should be matched with stringent, detailed regulations. Permit conditions on the other hand are used to tailor a permit to a specific kind of facility. Permit conditions do not belong in general permits, because comprehensive regulations should cover every situation under a general permit.

Naturally industry wants the best of both worlds and this is likely the reason that industry consultants have proposed this bizarre situation – general permits with few regulations, with only reference to permit conditions in the dSGEIS, and no intent for there to actually be permit conditions.

- If general permits are to be used we recommend a significant expansion of the proposed regulations with stringent monitoring and reporting requirements, and automatic fines without lengthy legal actions by the DEC.
- We recommend that the final dSGEIS clarify the aforementioned inconsistencies and contain clear statements of the proposed requirements throughout the document.

Emergency Planning & Response

The Emergency Planning and Response section of the dSGEIS provides no discussion of the types of emergency situations that may occur, nor does it provide requirements for prevention measures or monitoring. Instead, DEC only proposes that industry prepare an emergency response plan identifying only a few essential elements, such as a key responsible official. Furthermore the section managed to avoid discussing fires and explosions. We cannot imagine any credible environmental impact statement that fails to cover fires and explosions, when natural gas has explosive properties. This is partly due to the fact that the dSGEIS covers many emergency incidents, by calling them non-routine incidents and dealing with them under Chapter 7 that addresses mitigation. This is completely inappropriate.

“The Department proposes to require as standard permit conditions non-routine incident handling requirements to ensure that any potential environmental or public health issues are identified, reported, and remedied as expeditiously as possible. Non-routine incidents would be identified as soon as possible, and verbal notification to the department would be made within two hours of its discovery or known occurrence. Non-routine incidents may include, but are not limited to: casing, drill pipe or hydraulic fracturing equipment failures; cement failures; fishing jobs; fires; seepages; blowouts; surface chemical spills; observed leaks in surface equipment; observed pit liner failures; surface effects at previously plugged or other wells; observed effects at water wells or at the surface; complaints of water well contamination; anomalous pressure

and/or flow conditions indicated or occurring during hydraulic fracturing operations; or other potentially polluting non-routine incidents or incidents that may affect the health, safety, welfare, or property of any person.” (dSGEIS, Page 7-57-58)

The Department has not adequately addressed emergency prevention and emergency response planning. These are two related but separate issues, but subsuming prevention into emergency response assures that prevention will never be even considered. Other than production of an emergency response plan, the Department has no requirements for emergency planning.

- 1) There should be an emergency prevention plan
- 2) The Department should establish requirements: key onsite equipment for monitoring, alarms, emergency reporting contacts, emergency response equipment, training for workers, and coordination with emergency responders.
- 3) Requirements should be established in regulations, not in permit conditions.

Understanding of likely events and incidents enables the development of plans for preventive actions to limit their occurrence as well as to more effectively handle them.

Additionally, we should not forget that the release of this version of the dSGEIS was postponed due to the severe impacts Tropical Storm Irene had on upstate New York. New information regarding floodplains has yet to be included in this important document.

- We recommend more appropriate treatment of emergency planning in the final EIS as well as specific regulations that stipulate detailed requirements for prevention and response.

State- Owned Lands must be protected by definite unalterable prohibitions on drilling

Restrictions on drilling on State- owned lands need to be more firmly established than provided in this dSGEIS. The only clear restrictions are related to the Adirondack and Catskill preserves as provided in the State constitution.

Other state owned lands administered by the Department- forests and wildlife management areas—could be subject to drilling under this dSGEIS merely by a change in which agency administers the lands. Similarly there is only a state policy related to the restriction of the use of state parks and policies can be changed at any time. We have also noted that the 1992 GEIS actually allowed drilling in State parks. The Department suggests repeatedly the wholesale adoption of the 1992 GEIS and given this provision allowing drilling in state parks in the 1992 GEIS, we are opposed to wholesale adoption. There are likely significant changes made since that time in laws and regulations, and we see no evidence that DEC has compared the earlier document to the current dSGEIS and addressed conflicts.

The definition of state-owned lands is not adequately addressed in this dSGEIS. Beyond the identified forests and wildlife areas there are unique areas, historical sites and other state –owned properties set aside for specific purposes or future specific uses. If the full range of state-owned lands were not even defined, how could the state possibly adequately study the full environmental impacts? The dSGEIS even states “surface disturbance associated with gas extraction could have a significant adverse impact on habitats contained on the state-owned lands, and recreation use of those lands” (dSGEIS, p. 6-91). However, this dSGEIS moves to propose a mitigation without first discussing and analyzing any of these potentially “significant adverse” impacts. The mitigation suggested is only a restriction on surface disturbances. Ground & surface water contamination, air emissions, increased seismic activity and other effects associated with subsurface extraction of natural gas were not studied at all.

The requirements of SEQRA begin with comprehensive study and the proposal to open up all of New York’s public lands to hydraulic fracturing without the required study is unacceptable. Appropriately designed mitigations must be based on thorough analysis, and careful deliberation. The proposed mitigations in the dSGEIS do not meet this test.

- We recommend that the final dSGEIS include an explicit definition of state-owned lands and that all “significant adverse impacts” on state-owned lands be identified and analyzed. Clear prohibitions for drilling on state-lands must also be clearly identified.

Climate Change

One of the first casualties of the state’s plan to permit high volume horizontal hydrofracking is that the Draft Climate Action Plan has been shelved following extensive public comment with no direction provided by the Governor’s Office. The entire climate change effort represented years of work and staff time by multiple state agencies, and paid consultants. It would seem that the drive to allow large scale natural gas drilling in the state is incompatible with addressing Climate Change. Large emissions of methane associated with gas drilling would need stringent controls based on the science. The urgency of addressing climate change provided important imperatives for state agencies to grapple with. The failure of follow through on the Climate Action Plan means that critically important adaptation measures will not be put in place for public safety and health, and that rather than controlling the states’ GHG emissions, the state will actually encourage dramatic increases in GHG emissions related to this proposed action. This alone is potentially calamitous, but there is no discussion of the importance of a Climate Action Plan for state residents or the impact of hydraulic fracturing on efforts to control GHG emissions.

This dSGEIS does not adequately analyze the cumulative impacts of thousands of new gas operations on state efforts to reduce greenhouse gas emissions. It focused primarily on combustion emissions from engines.

The GHG inventory prepared for the state climate action plan provided no estimate of methane leakage from gas drilling equipment. EPA recently discovered that its estimates for leakage from

gas drilling were 35 times too low for conventional hydraulic fracturing and 9000 times too low for newer horizontal hydraulic fracturing. Since the state used no baseline estimate for methane emissions from drilling its inventory represented a significant underestimate.¹⁹

DEC's industry consultants on this dSCEIS failed to provide any reference to or discussion of the new EPA estimates of methane emissions and to adjust their emissions estimates as a result. Methane emissions have significant global warming potential over a 20 year period – 72 times that of CO₂ according to the IPCC, Intergovernmental Panel on Climate Change, and 105 times that of CO₂ according to NASA.

- The DEC must address the impacts hydrofracking will have on GHG emissions, especially methane, in NYS and propose a stringent control plan.
- If hydrofracking has not already killed movement on the Climate Action Plan, DEC needs to demonstrate progress in addressing climate change.

Applicable Laws & Regulations

When a private entity prepares an EIS it is standard practice to require a full discussion of all applicable laws and regulations that affect a particular project. This step has been skipped and it has important implications, particularly for this industry. Given that the gas industry has exempted itself from many federal environmental laws, it is important that the gas industry and the public understand which federal laws still apply as well as what state laws will be regulating this industry.

- We recommend making this addition to the final EIS.

Purpose & Need for Toxic Additives have not been demonstrated

The revised draft SGEIS claims industry needs to use hundreds of chemicals, over 700, to do hydraulic fracturing. However, hydraulic fracturing is largely a physical process relying on liquid under high pressure to cause the fracturing of the shale rock formation. There is no detailed presentation of each specific chemical and/ or mixture and a demonstration of its purpose and need in hydraulic fracturing. The implication is that industry needs free rein to choose any chemical it wants, no matter how useful for the application or how toxic it is.

We don't believe the industry ever took a careful look at over 700 chemicals even for their utility not to mention their toxic effects. We doubt that the industry has ever experimented with individual chemicals and their specific applications to hydrofracking—thus establishing their purpose and need.

- We recommend that the state require the submission of all scientific documents and experiments that demonstrate the purpose, need and concentration for each chemical proposed for use at each drill site.

- If the industry cannot demonstrate scientifically the need for each toxic chemical and that safer alternatives will not serve the same function, then the state DEC should immediately prohibit the use of persistent bioaccumulative toxins, carcinogens, endocrine disruptors, neurotoxins and reproductive/developmental toxins as well as other chemicals of high concern for environmental or health effects.

END

¹ Environmental Protection Agency. December 2011. *DRAFT: Investigation of Ground Water Contamination near Pavillion, Wyoming*. http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf

² Lee, M, December 28, 2009. Star-Telegram, *Texas Supreme Court ruling discouraged suits against gas drillers*.

³ The SEAB Shale Gas Production Subcommittee Ninety-Day Report, August 18, 2011,

http://www.shalegas.energy.gov/resources/081111_90_day_report.pdf, p. 10-11.

⁴ Miller, J. November, 26, 2011. Associated Press. *Environmental programs fall victim to budget cuts*.

http://old.news.yahoo.com/s/ap/20111126/ap_on_re_us/us_broken_budgets_environment.

⁵ Browning, J., & Kaplan, A. November 10, 2011. *Deep Drilling, Deep Pockets in Congress*.

<http://www.commoncause.org/atf/cf/%7Bfb3c17e2-cdd1-4df6-92be-bd4429893665%7D/DEEP%20DRILLING%20DEEP%20POCKETS%20NOV%202011.PDF>, p.1

⁶ U.S. Energy Information Administration. Natural Gas Year-in-Review. December 9, 2011.

http://www.eia.gov/pub/oil_gas/natural_gas/feature_articles/2010/ngyir2009/ngyir2009.html

⁷ Food and Water Watch. November 2011. Exposing the Oil and Gas Industry's False Jobs Promise for Shale Gas Development. <http://documents.foodandwaterwatch.org/FalseJobsPromiseReport.pdf>, p 10.

⁸ Horwitt, Dusty, J.D. December 2011. *Drilling Doublespeak: Gas Drillers Disclose Risks to Shareholders – But not to Landowners*. http://static.ewg.org/pdf/Drilling_Doublespeak.pdf

⁹ Ibid. p. 17.

¹⁰ Ibid. p. 12.

¹¹ ProPublica Nov. 29, 2011.

¹² Texas Oil and Gas Accountability Project. April 2011. *Natural Gas Flowback: How the Texas Natural Gas Boom Affects Health and Safety*. <http://www.earthworksaction.org/files/publications/FLOWBACK-TXOGAP-HealthReport-lowres.pdf>

¹³ Ibid. p. 17, 14.

¹⁴ Urbina, I. October 19, 2011. New York Times. *Rush to Drill for Natural Gas Creates Conflicts with Mortgages*.

¹⁵ Radow, E.N. November/December 2011. NYSBA Journal. Homeowners and Gas Drilling Leases: Boon or Bust?

¹⁶ Department of Transportation. Accessed on December 15, 2011. New York State's Bridge Program in Brief.

<https://www.dot.ny.gov/main/bridgedata>.

¹⁷ Department of Environmental Conservation. 2011. Fact Sheet: 2011 Recommendation for Permitting High-

Volume Hydraulic Fracturing in New York State.

http://www.dec.ny.gov/docs/materials_minerals_pdf/sgeisgenfs092011.pdf

¹⁸ Texas Oil and Gas Accountability Project.

¹⁹ Lustgarten, A. January 25, 2011. ProPublica. Climate Benefits of Natural Gas May Be Overstated.

<http://www.propublica.org/article/natural-gas-and-coal-pollution-gap-in-doubt>.

<http://www.propublica.org/article/natural-gas-and-coal-pollution-gap-in-doubt>.