



TOMPKINS COUNTY
ENVIRONMENTAL MANAGEMENT COUNCIL

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December 27, 2011

New York State Department of Environmental Conservation
Attn: dSGEIS Comments
625 Broadway
Albany, NY. 12233-6510

Re: Comments on the Revised Draft SGEIS on the Oil, Gas, and Solutions Mining Regulatory Program

To Whom It May Concern:

The Tompkins County Environmental Management Council is grateful for the opportunity to comment on this revised draft. We appreciate the NYSDEC's efforts expended to address our and others' comments on the previous draft. Having responded to the thousands of comments provided by individuals and organizations, this document represents a substantial improvement. Our present comments are directed to the draft SGEIS as a whole, and we do not distinguish between the original and revised drafts.

However, there are several areas that require significant attention if New York's environment is to be fully protected. We embrace Commissioner Martens' assurances that "**NYSDEC's number one priority is to protect drinking water for all New Yorkers**" and "**NYSDEC will not issue any more High Volume Hydraulic Fracturing permits than it has the personnel to process and protect the public from potential harm.**" To achieve these goals, this environmental review and associated regulations must address, among several other issues that we identify in this document, the lack of treatment and disposal capacity for a variety of contaminated wastes and the failure to reconcile the greenhouse gas emissions to be generated by the proposed massive natural gas industrialization with the NYS Climate Action Plan. Despite the fact that the High Volume Hydraulic Fracturing Advisory Panel studying funding sources has been given extended time to prepare its report, we are very concerned that many of the activities associated with natural gas development will receive inadequate funding and oversight.

We have attempted to align our comments with the categories listed on the electronic comment form. However, we are also submitting this hard copy to reflect the more logical approach as we proceeded with our review section by section through the dSGEIS document.

Comments 1, 2, 3, 4 and 5

Waste Transport (dSGEIS 6.1.7, 7.1.7)

Comment 1: Flowback and production brine waste water should be classified as hazardous industrial-commercial waste.

NYSDEC makes a blanket statement that all such wastes will be considered non-hazardous industrial-commercial waste which would be hauled under a NYS Part 364 waste transporter permit

issued by the Department. This appears to be an extension of the exemption from hazardous waste management provided by Congress in 2005 to wastes from all oil and gas exploration and production activities. This exemption is not based on sound scientific methodology. Why would the EPA be preparing to spend the next two years examining how best to treat such wastewater if it were not at least **likely** that some portion of it would be considered hazardous? The precautionary principle should apply here. Proper treatment of these wastes will prevent pollution and is far less costly than subsequent remediation.

Although NYSDEC states in the dSGEIS that there is "little data available on the constituents and concentrations" of the toxic chemicals used in hydraulic fracturing products, we believe that the extensive study of these chemicals done by The Endocrine Disruption Exchange (TEDX)¹ makes it very clear that there are many hazardous substances and materials among them. Potential carcinogens in hydraulic fracturing products are benzene, formaldehyde, xylene, and monoethanolamine. Heavy naphtha, which may also be used, is a mixture of many hydrocarbons including several that are carcinogenic. The mutagen 4-nitroquinoline-N-oxide has been identified in some flowback waste waters. Endocrine disruption impacts may result from the degradation of nonylphenol and octylphenol ethoxylate surfactants. In addition, of course, there have been many studies² of the large quantities of NORMs present in flowback water. It is irresponsible to determine in advance of any data collection that such wastes should not require handling as hazardous waste. Failure to properly classify those wastes will present a threat to public health and the environment. Section 6.1.7 sets forth on page 6-56 "*one concern is that wastes will not be properly identified or may not be taken to appropriate, permitted facilities. Chapter 7 provides mitigation for this concern in the form of a waste tracking procedure similar to that which is required for medical waste even though the hazards are not equivalent. Another concern relates to potential spills as a result of trucking accidents.*" That paragraph ends with the statement, "*It should be noted that the developing practice of treating and reusing flowback water on the same well pad should reduce the number of truck trips for hauling flowback water to other destinations.*" **In other words, the two most serious concerns that the NYDEC has about the dangers of flowback water are dismissed with the hope that there may not be as much of it to worry about as one might imagine.**

1. Theo Colborn, Carol Kwiatkowski, Kim Schultz, and Mary Bachran, "Natural Gas Operations from a Public Health Perspective" *International Journal of Human and Ecological Risk Assessment*, September-October 2011.

2. Martin Resnikoff, Ph.D., Radioactive Waste Management Associates, September 2011.

Comment 2: The NYSDEC must require the use of less hazardous alternative compounds to mitigate the risk of contamination to ground and surface waters.

To reduce the risk of contamination from spills, storage failure, improper disposal, or insufficient treatment, potential carcinogens, mutagens, and endocrine disruptors should be banned from hydraulic fracturing products utilized in New York State. This discouragement of specific chemical additives will promote the development and adoption of more green and non-chemical fracturing technologies and additives. Regulating chemicals at the end of the pipe (not at their introduction into the environment but after treatment) during the SPDES permit issuance and monitoring process, will not reduce the risks of harmful releases to the environment.

Comment 3: ECL 27-0903(2) Environmental Conservation Law statutory language does not support an exemption for High Volume Hydraulic Fracturing wastes from management as hazardous waste.

ECL 27-0903(2) provides for an "exemption from the provisions of this title (Title 9, Industrial Hazardous Waste Management) for the management of small quantities of wastes listed or identified as hazardous when generated by research and limited use operations". The SGEIS, relying on data from High Volume Hydraulic Fracturing operations in Pennsylvania, estimates that flowback water

recovery is in the 9-35% range. If 2.4 -2.7 million gallons is used for each wells' hydraulic fracture, flowback water generated will range from 216,000-945,000 gallons. This is neither a "small quantity" nor "limited use operation". The provision in Part 371.1(e)(2)(v) to exclude drilling fluids, produced water, and other wastes associated with the exploration, development, or production of natural gas", whether justified for application to vertical well wastes or not, clearly does not apply to HVHF wastes. If not treated properly, these hazardous wastes will contaminate both drinking water and soil. The NYSDEC, the agency delegated to protect our environment, has no compelling reason to support this loophole to the proper transportation, treatment, and disposal of such wastes. Continued advocacy by the NYSDEC in support of this interpretation of the statute will undermine the agency's stated objective of protecting NYS's environment and public health.

Comment 4: Shipments of drilling and fracturing fluids, mud drilling cuttings, flowback and production brine must be regulated by the hazardous waste management system.

The Pennsylvania experience demonstrated that some such wastes were diverted from appropriate treatment and disposal facilities and discharged improperly onto the ground or into surface waters. (Ian Urbina, NY Times Feb. 26, 2011) Therefore, manifesting of such wastes must be required to track and verify proper handling on a per-load basis. The proposed mitigation set forth in Chapter 7, the application of a system similar to that of medical waste is not sufficient. NYS must collect the manifests and create a publicly accessible electronic data base.

NYS must collaborate with adjacent states on a robust tracking system by entering into interstate compacts or other arrangements. As both Ohio and Pennsylvania are sites of natural gas exploration and production, it is in their self-interest to achieve such agreements.

Comment 5: We support the dSGEIS requirements for mandatory full disclosure of the chemical ingredients of hydraulic fracture products. Transparency is critical to support the assurances of safety of the hydraulic fracturing process.

On October 31, 2011 the U.S. Department of the Interior announced its intent to require disclosure of fracturing fluid composition on federal lands. Such disclosure must include all chemicals, not just those that appear on Material Data Safety Sheets. Additionally these chemicals must be reported on a well-by-well basis and posted on a publicly accessible website that includes tools for searching and aggregating data by chemical, by well, by company, and by geography. The bar for trade secret protection must be very high.

New York State must do no less. The MSDS alone provides only a portion of the chemical ingredients being utilized: those that are hazardous to public health but not those that solely damage the environment or those that are not considered hazardous individually. Without knowing the concentration and volume to measure toxicity, concentrates may behave differently as chemicals break down and react with others underground. We need to understand the full portfolio of health effects that are possible from industrial chemicals. Research on acute and especially chronic effects has only been conducted on a small portion of the 80,000 chemicals registered for commercial use.

The U.S. Department of the Interior announced on October 31, 2011 that it intended to require the public disclosure of fracturing fluid composition on federal lands. The Subcommittee on Shale Gas Production of the Secretary of Energy Advisory Board urgently encourages states to adopt a similar policy (SEAB Second Ninety Report, November 18, 2011).

Comments 6, 7, 8, 9, 10, 11, 12, and 13

Fluid Discharges (dSGEIS, 6.1.8, 7.1.8)

Comment 6: Permits should not be issued without a certification that the applicant has identified a facility with adequate capacity.

New York State currently has no capacity to safely treat and dispose of flowback and production brine waste waters. The dSGEIS refers to this deficiency in several places in the document. "There is questionable available capacity for POTWs in New York State to accept high volume hydraulic fracturing waste water" (SGEIS, p.6-62). The natural gas industry has the primary responsibility for identifying or constructing the required capacity. However, the NYSDEC, with its dual mission of promoting economic development and protecting the environment, must participate in the development of substantial capacity. Once the SGEIS and the regulatory review process have been completed, there will be considerable political pressure to issue permits. We fear that in order to avoid the accusation that the Department is responsible for further delays in the initiation of natural gas exploration and production, it may approve treatment and disposal options that are not fully protective of the environment.

Publicly Owned Treatment Works (dSGEIS, 6.1.8.1)

Comment 7: Flowback and production brine waste waters are not treatable at NYS POTWs.

The U.S. House of Representatives Energy and Commerce Committee identified 2500 hydraulic fracturing products utilized by 14 exploration and production natural gas companies. These products contained 750 different chemicals, 29 of which are suspected human carcinogens or hazardous air pollutants. No NYS POTW has the capital-intensive pretreatment systems required to treat these wastes. Due to the wide variety of chemical constituents, some pretreatment systems may not be designed to adequately remove them, resulting in pass through to the receiving body of water. All waste waters must be fully characterized to identify their constituents prior to shipment to treatment facilities. To accept such wastes for treatment creates a risk of interference with the plant's ability to adequately treat municipal sewage, which is their primary responsibility. When the NYSDEC surveyed the POTWs with industrial pretreatment systems in December of 2008, none indicated an interest in receiving such wastes (We note here that the City of Niagara Falls recently discussed the possibility of upgrading their system for this purpose.)

Comment 8: Cumulative impacts of POTW discharges to receiving waters must be considered when issuing a SPDES permit to the facility.

There was no analysis in the dSGEIS of the cumulative impacts through the POTWs release to surface waters with respect to Total Dissolved Solids (TDS). Potential receiving waters may already be carrying a heavy load of TDS from urban stormwater discharges as well as road salt runoff.

Private off-site treatment and/or reuse facilities (dSGEIS, 6.1.8.2)

Comment 9: Specifically designed industrial treatment facilities may be the best long-term option to expand treatment capacity.

Flowback and production brine waste waters present a significant challenge as they have a wide variety of toxic chemical constituents requiring a multiplicity of technologies. Prior to permitting these facilities, a very rigorous Maximum Allowable Head Works analysis must be conducted. Given the expense of such a facility, it is likely that only a few will be constructed, and they will receive very large volumes of HVHF waste. They must operate under very strict effluent limitations and be intensely monitored. The test results must be easily accessible to the public. A robust compliance program must be established to prevent violations of the facilities' SPDES permits. Otherwise the community in which this regional facility is located will believe itself to be victimized by being the recipient of a disproportionate share of the wastes.

Private on-site waste treatment and/or reuse facilities (dsGEIS, 6.1.8.3)

Comment 10: Due to the risk of localized contamination near the well pad, such operations should only be conducted at sophisticated regional industrial treatment plants.

Recycling/reuse will further concentrate the toxic chemicals and radionuclides in the waste. The risk of accidents increases as there is increased handling of the wastes in the vicinity of the well pad. Observers have noted a lack of vegetative regeneration near well pads, which indicates chronic contamination of the soil by work at the pads. The equipment used and the level of training of well-site personnel will be less adequate than that at a fully equipped industrial waste water treatment facility.

Disposal Wells (dsGEIS, 6.1.8.4)

Comment 11: The geologic formations in NYS, for the most part, lack the required characteristics for the construction of injection wells, and must not be used for flowback waste water disposal.

In-state formations lack storage cavities or pore space to receive injected fluids. There has been little research conducted by the U.S.G.S. nor much data generated that would indicate that there is much, if any, capacity to receive such wastes. Abandoned Trenton-Black River wells have small cavities and the surrounding formations have low permeability and thus offer little potential for ultimate disposal. Flowback water, whether classified as hazardous or non-hazardous, must be disposed at UIC-1 disposal wells. UIC-II d wells are only appropriate for disposal of production brines not contaminated with toxic chemicals, *i.e.* those associated with fluids produced during production at conventional vertical natural gas facilities.

Comment 12: When siting a proposed injection well in New York State, the NYSDEC must require a site specific review.

Local geology (faults and seismicity), hydrogeology, nearby well bores, or other potential conduits for fluid migration must be identified and analyzed for suitability as a site for safe disposal. There are thousands of orphan wells that must be located and appropriately abandoned.

Comment 13: Underground injection wells must be prohibited adjacent to a Finger Lake.

Due to glaciation and ice retreat these areas have been scoured and covered by unconsolidated deposits. Therefore these areas of complex geological formations have not been adequately characterized. Also the mapping of faults in these areas is incomplete and some maps indicate that there are more than those depicted in Fig. 4.13.

Other Means of Waste Water Disposal (dsGEIS, 6.1.8.5)

Comment 14: We oppose shipment of waste waters to out-of-state waste water treatment plants.

If there are indeed benefits to NYS residents from the production of natural gas, we must accept the responsibility to safely treat and dispose of the associated wastes. The Waste Water Treatment Facilities listed in this document in Pennsylvania are small and most unlikely to satisfy our intention to address our criteria for environmentally sound treatment and disposal.

Comment 15 and 16

Disposal of Solid Wastes (dsGEIS, 6.1.9, 7.1.9)

Comment 15: Cuttings must be managed in a closed loop tank system and ultimately removed to be disposed in a Part 360 solid waste facility or a Part 380 (Prevention and Control of Environmental Pollution by Radioactive Materials) radioactive materials management facility.

Cuttings will be contaminated with oil-based or polymer-based mud. Water-based mud will be contaminated with brine and/or chemical fracturing additives. Where pyrites are recovered from the

formation, they should be collected and shipped off-site for treatment and disposal. These materials may also be contaminated with sulfuric acid, heavy metals, and NORMs. In conclusion, all fluids and solids produced during the exploration and production process (chemicals, drill mud, cuttings, produced water, or radionuclides) must be removed from the well site for appropriate treatment and disposal. There will be minimal post-closure monitoring of these sites to ascertain their long-term environmental impacts from any contaminated material spilled or buried there. With our unhappy, ongoing experience in funding and adequately cleaning up contaminated (Super Fund) sites in NYS, we must avoid creating future such sites on every abandoned well pad.

Comment 16: Disposal of sludges produced during the treatment of flowback water must not be applied to land as a soil amendment.

Radium in solution may or may not be reduced during treatment to acceptable levels to discharge into surface waters while being retained in the facility's sludge. Since many POTWs currently land apply their sludge, this must be prohibited. As we set forth elsewhere in our comments, NORMs are most appropriately removed from sludge with a pretreatment process prior to further treatment and disposal of the sludge.

Comments 17 and 18

Beneficial Use Determinations (dsGEIS, 5.13.3, 7.1.7.2, Appendix 12)

Comment 17: We support the NYSDEC decision to forbid the use of flowback water upon roads for dust control and de-icing.

Flowback waste waters must be transported to appropriate treatment and disposal facilities.

Comment 18: We also support the interim decision to forbid the use of production brine upon roads for dust control and de-icing. We strongly advocate converting this decision to a permanent ban.

The data available on NORM concentrations in Marcellus Shale production brines is insufficient to permit road spreading. The radioactivity of any given load of such brine will be highly variable, because the radioactive materials are not evenly distributed throughout the formation. Radium 226 must be removed prior to the consideration of any beneficial use, packaged, and shipped to a disposal facility. Thereafter, each load must be tested for a variety of toxic chemicals and radionuclides to determine if such load is eligible for beneficial use. Potential public health impacts are human exposure to gamma rays or inhaled radioactive particles under dry conditions. Given that it may be expected that NYSDEC will provide little staffing to oversee this operation, the temporary ban should be made permanent.

Comments 19, 20, 21 and 22

Naturally Occurring Radioactive Materials Impacts (dsGEIS, 6.7, 7.7)

Comment 19: NYSDEC must require by regulation that radiation surveys be conducted at frequent intervals at Marcellus Shale well pads on well piping, feeder lines, and condensate tanks that concentrate NORM scale residues.

The Marcellus is the most radioactive shale stratum in NYS (20-25 times in excess of background). Radionuclide recovery in flowback and brine production waste waters varies greatly throughout this formation. Worker health is threatened by scale build-up in well pad equipment, and regular radiation measurements must be acquired. Where there is significant build-up, workers can be exposed while working in the vicinity of the equipment. Such exposure increases the workers' risk of developing cancer.

Comment 20: After their useful life, pipes from the well pad must be appropriately disposed and not recycled.

Stored pipes may emit dangerous levels of gamma rays. Additionally, as the pipe scale dries, it may circulate in the storage yard and increase the risk of exposure to workers and nearby residents.

Comment 21: NYSDEC must prohibit the collection and handling of Radium 226 at the well pad.

Radium 226 has a half-life of more than 1600 years. Contaminated waste water and drill cuttings must be shipped to a specifically designed industrial facility for treatment. Radioactive sludge must be disposed of at a Part 380 radioactive materials handling facility.

Comment 22: Radium 226 must be removed from flowback waste water and production brine with specifically designed treatment processes.

Since Marcellus Shales may have more than 5000 pCi/L of Radium 226, most treatment processes will leave in their residues a highly radioactive waste product. These levels must be measured and the solids disposed in an appropriate waste facility as referenced above.

Comment 23

Air quality mitigation (dsGEIS, 7.5)

Comment 23: NYSDEC must mitigate and monitor exposure of well pad workers and nearby residents to radon.

Although the Air Quality Mitigation section suggests ways to minimize sulfur oxides, nitrous oxides, methane, and ozone during gas drilling operations, there is no discussion at all of radioactive radon gas mitigation or monitoring. Radon can be trapped in the same pockets as natural gas in the Marcellus shale. Any radon released into the atmosphere or entrapped with the natural gas poses a significant health hazard. EPA estimates that more 14% of the annual lung cancer deaths (one of the most lethal cancers) are due to radon exposure. The workers at the drill pads are sure to be exposed to any radon that is generated with the natural gas. All of the drill pad workers should be required to wear radiation badges and records of dosages received should be kept. Radon also dramatically increases the cancer risk for those exposed to cigarette smoke. Many of the areas proposed for hydraulic fracturing already suffer from levels of radon in homes on average that require remediation. (Reference: <http://www.health.state.ny.us/environmental/radiological/radon>) A continuous on-site monitoring system for radon with an alarm system should be present at each well with electronic record keeping to ensure that the radon separation procedure at the site is working and that radon is not entering the pipeline.

Comment 24

Comment 24: Toxicity monitoring plan must be improved.

The toxicity monitoring program proposed for the hydraulic-fracturing industrial process is inadequate. To the layman the plan may seem reasonable but not from a chemical and toxicological point of view. The suggested monitoring does not protect the health and safety of the public who rely upon clean water and clean air. As a first step in water monitoring, the flow back must be declared a hazardous waste so that there is a written paper trail following each load of waste. A chemical analysis of the flow back water would provide inspectors with concentrations of various components but it would not give them the overall health effects. The MSDS sheets and the listed properties do not apply to mixtures of the chemicals. Those mixtures themselves must be tested as to their properties so that emergency personnel know what measures to take if there is a spill. In addition, there are unknown components in the flowback water that will be produced by high pressure reactions of the hydraulic fracturing fluid and the shale. Monitoring of this flowback water will be important because it may have

very different properties from the hydraulic fracturing fluid that will relate to its proper treatment and storage. A thorough chemical analysis should be done of the flow back fluid with special attention to its corrosiveness and its stability in storage. Complex mixtures such as hydraulic fracturing fluids and flowback fluids can be more harmful than their component parts. Therefore comprehensive toxicological testing is appropriate because it would identify the effects of the overall fluid in terms of endocrine disruption and carcinogenic effects. Concern over these toxicological effects was stated in response to the draft SGEIS (The Environmental Magazine, April 2010) but has not been dealt with in the current document. Modern toxicological methods would have to be adapted to this use in order to determine potential deleterious effects of hydraulic fracturing mixtures.

Comments 25, 26, 27, 28, and 29

Greenhouse Gas Emissions (dSGEIS, 6.6, 7.6)

Comment 25: The DSGEIS must require operators to meet specific emissions thresholds to bring them into compliance with local and state emissions goals.

Although the dSGEIS contains numerous suggestions for voluntary measures by which the industry can minimize GHG emissions during its operations, there is no discussion of the impact of High Volume Hydraulic Fracturing on the goals of the New York State Climate Action Plan. Was the Climate Action Council (appointed by Governor Paterson to determine how NYS would achieve these goals) a participant in the SGEIS review process? Methane gas has a global warming potential 72 times that of carbon dioxide over 20 years (the period of our utmost concern here due the need to drastically reduce our emissions in the short-term) and 25 times over 100 years (IPCC Fourth Assessment Report, Working Group 1, Chapter 2). It presents a substantial threat to the environment and is released in large volumes during the exploration and production, transshipment, and processing of natural gas (R.W. Howarth, R. Santoro, A. Ingraffea (2011) Methane and the greenhouse footprint of natural gas from shale formations, p.679-690). Howarth et al. have calculated the 20 year horizon global warming potential as 105 (p.685). Tompkins County has established a policy to "reduce community greenhouse emissions by at least 2% of the 2008 base year emissions per year to reach a minimum of 80% reduction by 2050 (Tompkins County Comprehensive Plan: Energy and Greenhouse Gas Emissions Element, 2008). Utilizing the most comprehensive data in the SGEIS, over the 30 year well, life time emissions from 100 one-well projects will more than double community emissions making it impossible for Tompkins County to meet its greenhouse emissions goals. This industrial activity will also substantially diminish the likelihood that NYS will achieve its goal of reducing greenhouse gas emissions 80% below 1990 levels by 2050. The dSGEIS mitigation measures are woefully insufficient to prevent large volumes of methane from entering the environment.

Comment 26: Greenhouse gas emissions from exploration and production of natural gas as projected in the dSGEIS are far less than might be expected with the application of the most recent, best scientific information.

Is the data utilized in the dSGEIS extracted from historical oil and gas industry records? If so, the NYSDEC must seek out data from independent, peer-reviewed, and more recently published scientific literature. Shale gas has a much larger greenhouse gas footprint than acknowledged by the industry and government regulatory agencies. Methane emissions from shale production are at least 30% more than and perhaps more than twice as great as those from conventional gas wells (Howarth et al. p.679).

Comment 27: Proposed mitigation measures are insufficient to adequately address the potentially grave impact of fugitive emissions.

Misreporting has been a long-term problem in the natural gas industry. There has been an over-reliance on voluntary reporting mechanisms. Often losses from on-site storage and loading/unloading are not reported. Reporting forms are inadequate to reflect accurately emissions during gas

processing at the production facility. There is often only one space provided to report a single aggregate value for venting and flaring. Such emissions are not metered, but estimated. The NYSDEC has provided no recommendations for the development of more detailed measurement guidelines. The U.S. Environmental Protection Agency has issued proposed new rules on New Performance Standards and National Standards for Hazardous Air Pollutants for the oil and natural gas sector. The Shale Gas Subcommittee of the Secretary of Energy Advisory Board supported the new rules but stated that these rules fall short because they do not directly control methane emissions and the NSPS rule does not address existing shale gas sources. The Subcommittee has recommended that federal (Greenhouse Gas Reporting Rule) and state governments require companies to measure and disclose air emissions from shale gas source (SEAB Second Ninety Report, Nov. 18, 2011). In addition to flaring and venting, fugitive emissions are released with flowback water returns and drill out, the stage when plugs are removed prior to production. Further losses occur from equipment leaks, processing, transport, storage, and distribution. NYSDEC currently lacks sufficient staff to provide daily oversight of this activity at each well pad.

Comment 28: The NYSDEC must utilize a 20 year, rather than 100 year, horizon for evaluating the greenhouse gas footprint of methane in assessing the Global Warming Potential of natural gas development.

All previous projections on the impact of greenhouse gas emissions have underestimated their Global Warming Potential as determined by subsequent observations and measurements. A recent EPA(2010) report noted that a 1996 study was conducted at a time when methane emissions were not a significant concern and that the emission factors from the 1996 report "are outdated and potentially understated for some emission sources" (Howarth et al, p.681).

Near-term consequences of climate change have the potential for the release of vast volumes of sub-Arctic methane trapped within the permafrost layer. Such a release would initiate a catastrophic feedback loop of exponential increases in environmental methane.

Comment 29: Out-of-state shipment of flowback waste waters and production brines will increase New York State's greenhouse gas footprint.

While recognizing our State's limited jurisdiction in controlling private decision-making, the NYSDEC must discourage this option by supporting the in-state development of environmentally sound treatment and disposal capacity.

Comments 30, 31, 32, and 33

Interagency Coordination (dSGEIS, 8.1)

Local Governments (dSGEIS, 8.1.1)

SEQRA Participation (dSGEIS, 8.1.1.1)

Comment 30: Applications that present conflicts with local land use laws, regulations, plans or policies should require SEQRA participation.

This section identifies a listing of actions which when present will require all opportunities for public input normally provided under SEQRA. This listing should include the conflicts identified in 8.1.1.5 *Local planning documents*.

Local Government Notification (dSGEIS, 8.1.1.3)

Comment 31: Municipalities must be notified of each application for high-volume hydraulic fracturing in their localities immediately.

The Revised Draft SGEIS 2011 would require the DEC to provide notice to local government officials of application for high volume hydraulic fracturing in their locality. However, the timing of the notification is not addressed nor is the breadth of the information that will be made available to the local governments. DEC needs to provide notification immediately of any applications for high volume

hydraulic fracturing to the local governments with full disclosure of the contents of the applications so that local municipalities can respond appropriately to concerns about the application and provide notice to DEC of conflicts of the sort addressed in *8.1.1.5 Local Planning Documents*

Local Planning Documents (dSGEIS, 8.1.1.5)

Comment 32: Conflicts with local land use laws, regulations, plans or policies should require increased scrutiny and additional time for local governments to provide comments and concerns to the DEC.

Applicants are required to identify whether the proposed location of the well pad conflicts with local land use laws, regulations, plans or policies. In addition, applicants should be required to specify alternatives that have been considered and other mitigation measures which would eliminate or minimize conflicts with the local land use laws, regulations, plans or policies. Applications that identify such conflicts, or when DEC is notified of conflicts by the municipal governments, should trigger additional time for local government response to the conflict and proposal of mitigation measures. This would enable the NYSDEC to consider whether significant adverse environmental impacts would result from the proposed project that have not been addressed in the SGEIS and whether additional mitigation or other action should be taken in light of such significant adverse impacts.

County Health Departments (dSGEIS, 8.1.1.6)

Comment 33: Increased expense burden on local health departments must be resolved.

In section 8.1.1.6 "The SGEIS proposes that county health departments retain responsibility for initial response to most water well complaints, referring them to the Department when causes other than those related to drilling have been ruled out." (Emphasis added) In the event of multiple drilling sites in one county, there could be numerous complaints of this nature that local health departments would have to respond to, and in each case endless legalistic haggling over when all possible causes unrelated to drilling had been ruled out. Such investigations would entail much laboratory testing of water samples before and after the drilling. The whole effort would place an enormous financial burden on the county involved.

Therefore, we believe that proper monitoring and assessment strategies must be in place to protect the State's water resources, and sufficient laboratory capabilities for analysis must be in place prior to drilling. The state currently does not have a strategy in place for data collection and analysis. All stakeholders (regulatory personnel, drilling companies, and the public) need to be assured that valid data is being collected and disseminated in a cost effective manner. Considering the volume of environmental and public health data that will be generated by HVHF gas drilling, it is essential that NYSDOH develop and manage comprehensive databases in order to facilitate effective, comprehensive oversight and public protection during gas drilling. A program must be developed for electronic sharing of monitoring data with local health departments, as they will be the agency first contacted if any contamination is detected.

Comment 34

Comment 34: Permitting fees must be increased to cover the entire cost to the state of regulatory oversight of High Volume Hydraulic Fracturing.

The various Divisions of NYSDEC will incur enormously increased costs for 1) personnel to oversee field operations and process the associated paperwork, 2) health department personnel to develop and maintain a database and to evaluate drinking water quality data collected from groundwater wells near the drilling sites and respond to water quality complaints, 3) personnel to monitor surface water discharges from treatment plants, 4) personnel to develop and maintain a database on surface water flows and quality in the areas where drilling is occurring, 5) other regulatory personnel needed in the Division of Water and the Bureau of Hazardous Waste and Radiation Management as well as the DMR to oversee the immense program that drilling in the Marcellus Shale will necessitate, and 6)

local municipalities to cover increased costs for expanded services caused by drilling activities. The Division of Budget must perform an economic analysis to ensure that the permitting fees charged are adequate to fund all of the necessary environmental oversight as outlined above.

Comment 35

Comment 35: Table 8.1 The NYS Department of Health should be required to do a comprehensive study of health effects related to HVHF prior to the issuance of any drilling permits.

The Tompkins County Environmental Management Council believes that the NYS DOH should have been involved from the beginning in preparing the dsGEIS . Table 8.1 (Regulatory Jurisdictions) shows that its only role is something that “pertains in certain circumstances,” and we know from Section 8.1.1.6 that this means giving county health department’s responsibility for initial response to complaints of water well contamination.

The pioneering work of Dr. Theo Colburn, who founded of The Endocrine Disruption Exchange (TEDX), has resulted in a monumental study¹ from TEDX of “Natural Gas Operations from a Public Health Perspective” which has been publicly available for a number of years prior to its publication in September 2011. It comprises an exhaustive study of the toxicity of all identifiable chemicals used in the drilling and hydraulic fracturing processes, including the airborne chemicals that combine with diesel exhaust to produce ozone and heavy smog. Many of its findings are very disturbing. We know for a fact that all meaningful oversight and regulatory powers were removed from the EPA by Congress in the 2005 Federal Energy Appropriations Bill. As a result the gas industry is steamrolling over vast areas in the West without restraints from the Clean Water Act, Safe Drinking Water Act, Clean Air Act, and CERCLA. It seems obvious to us that New Yorkers deserve a thorough study of these same matters, tailored to our own circumstances by our own Department of Health. We need to have its recommendations incorporated into the SGEIS. We have a right to know that our health will not be sacrificed to the profit motives of multinational corporations.

1. Theo Colborn, Carol Kwiatkowski, Kim Schultz, and Mary Bachran, “Natural Gas Operations from a Public Health Perspective” *International Journal of Human and Ecological Risk Assessment*, September-October 2011

Comment 36

Comment 36: Effect of High Volume Hydraulic Fracturing on mortgages must be considered and evaluated in the Socio-economic Analysis section of the dsGEIS before any permits are issued.

The Tompkins County Environmental Management Council finds that there is **no mention** of the mortgage lending issue related to land leased for High Volume Hydraulic Fracturing in the Socio-economic Analysis section of the SGEIS. We believe that this is a very serious omission. The many ramifications of this issue have been extensively covered in the press (Ian Urbina, NYTimes, 10/19/2011). Congressman Maurice Hinchey has requested that Fannie Mae and Freddie Mac provide clarifications. Were High Volume Hydraulic Fracturing to be permitted, this is a matter that could have a devastating impact on property values in our county and thereby on the county tax revenues which are necessary to sustain all of our environmental programs. We regard this as an additional reason to proceed with caution, and we recommend delay in the initiation of High Volume Hydraulic Fracturing practices in New York State until the economic implications of this issue can be more thoroughly studied and understood.

Comments 37 and 38

Comment 37: Greater input from the Public Service Commission is required on light and noise pollution.

Although gathering pipelines and compressor stations will be important features of the total infrastructure needed to implement HVHF, there is no extended discussion of them in the dSGEIS, presumably because they come under the purview of the Public Service Commission (PSC) See Table 8.1. However, they clearly would have huge and damaging effects on the environment. We believe that the noise, the light pollution and especially the air pollution caused by the generators on every well pad need to be considered. Likewise, the construction of gathering lines from each well pad to the major conduits will result in loss of trees and woodlots, great gashes across farm fields or residential properties and the much increased erosion. These damaging effects need to be acknowledged and controlled as much as possible. **The regulations promulgated by DEC should not take effect until satisfactory recommendations for prevention or mitigation have been received from the PSC.**

Comment 38: Greater input from the Public Service Commission is required on air pollution. The regulations promulgated by DEC should not take effect until satisfactory recommendations for prevention or mitigation have been received from the PSC.

It is well known that compressor stations emit carcinogenic and neurotoxic compounds, volatile organic compounds and nitrogen oxides that create ozone (smog) and many more toxins. People who live in areas with compressor stations have reported serious health symptoms such as headaches, dizziness, blackouts, muscle contractions and ruptured ear drums from the constant low frequency roar of the compressors. In parts of rural Texas where gas pipeline compressor stations are located, asthma rates for children have risen from a normal 7% to a very abnormal 25%. (data from the Catskill Mountainkeeper, 10/28/2011) The health effects of such air pollution, obviously, are felt not only by people living or working close to compressor stations but also by people far removed from them in other parts of the state.

Comment 39

Comment 39: Compliance with local laws must be assured before drilling is permitted.

On 6/30/2011, NYDEC issued a document entitled "New Recommendations Issued in Hydraulic Fracturing Review." The section of this document called "Taking Local Governments and Communities into Account" contains the statement that the "Applicant must certify that a proposed activity is consistent with local land use and zoning laws. Failure to certify or a challenge by a locality would trigger additional DEC review before a permit could be issued." NYS court decisions have upheld the authority of local municipalities to control land use including whether and where extractive industries regulated by the NYSDEC are permitted. Municipalities have exercised their home rule authority in response to legitimate concerns of their residents and in accordance with their comprehensive plans designed to protect the public health and welfare and to protect and conserve community resources. Is it the Department's position that municipalities may control land use with respect to all heavy industry except natural gas exploration and production? Given that a number of municipalities in Tompkins County have incorporated bans against High Volume Hydraulic Fracturing into their zoning laws, the Environmental Management Council insists that these bans must be honored absolutely, not merely by a promise of "additional review" by the NYSDEC.

Comment 40

Comment 40: Rule making conducted prior to issuance of the FEIS is premature and must be delayed until all necessary mitigation measures are identified and addressed in the FEIS.

The parallel release of the proposed regulations and the dsGEIS will prevent the incorporation of many of the mitigation measures provided during this review process. The proposed regulations must be amended to reflect these comments and recirculated for public comment. The Tompkins County Environmental Management Council will not comment on the proposed regulations at this time.

Comment 41

Comment 41: NYSDEC must monitor and mitigate exposure of well pad workers, nearby residents and workers in the sand mines to airborne silica.

An immense amount of very fine sand is needed as part of the sand-water-chemical mixture blasted into the ground to release the methane.

In addition to the usual increase in traffic and risk of water pollution, sand mining kicks a lot of dust into the air, and fine grains are especially desirable as part of the proppant in the fracking fluids. In preparing these mixtures on the well pad, workers could be exposed to crystalline silica - a potent carcinogen that causes lung and other diseases

"There's a sand shortage in the US," Mark Papa, CEO of the mining company EOG, told investors in September. "And those who have sand or who have access to sand can pretty much charge what they want." (Reuters, 9/22).

As part of this SDEIS, DEC needs to address (1) the location of sand mining for this use (2) the processing of the mined sand, and (3) the attendant air quality and health concerns. Air quality monitoring should be required, especially of the fine particles.

Respectfully Submitted,



Stephen C. Nicholson, Chair

cc: NYDEC Commissioner Joe Martens
FRAC Act Sponsors in the House and Senate Counterpart-Diane DeGette, Maurice Hinchey, Jarid Polis, Bob Casey, Chuck Schumer
NY Senate Committees: Environmental Conservation (via Mark Grisanti), Health (via Kemp Hannon), and Local Governments (via Jack M. Martins)
NY Assembly Committees: Environmental Conservation (via Robert Sweeney), Health (via Richard Gottfried), Local Government (via William Magnarelli), Oversight of the DEC (members Daniel Burling, Crystal Peoples-Stokes, Matthew Titone), Science and Technology (via Donna Luparo), Toxic Substances and Hazardous Wastes (via Mike Spano), and Water Resources Needs of NYS and Long Island (Robert Sweeney)
Tompkins County Legislature
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