

MEMORANDUM

To: Department of Environmental Conservation

From: Helen Slottje, Community Environmental Defense Council, Inc.

Date: December 31, 2009

Re: Comment on the Draft Supplemental Generic Environmental Impact Statement (dSGEIS) on the Oil, Gas, and Solution Mining Regulatory Program.

1. A Generic Impact Statement is not Appropriate for Unconventional Shale Gas Drilling

SEQRA provides that a generic impact statement is appropriate in a limited number of circumstances, none of which apply to high volume horizontal hydraulic fracturing in the Marcellus Shale or other tight shale formations. 6 NYCRR § 617.10 (a). The DEC declines to address cumulative impacts in the dSGEIS which is the primary reason for a generic impact statement under 6 NYCRR § 617.10 (a)(1). Therefore, the DEC may not rely on the need to address cumulative impacts as a legal basis for the dSGEIS. Nor does the dSGEIS contemplate a sequence of actions such multiple phases to a residential subdivision per 6 NYCRR § 617.10(a)(2). The dSGEIS does not contemplate separate actions having generic or common impacts – the dSGEIS acknowledges that the impacts will vary by location and geology. The consideration of Marcellus Shale drilling should rightfully be left to a case by case examination, particularly given the new technology that allows for flexibility in placing of the well pad and the well bore. This sort of drilling is not limited by the location of a small number of reservoirs, the rock being “mined” lies underneath a huge portion of the state. The dSGEIS acknowledges a number of impacts best addressed by municipalities and the inability of the DEC to address cumulative impacts, therefore it is unreasonable, arbitrary and capricious for the DEC to finalize the dSGEIS at this time. The document should be withdrawn and Marcellus Shale drilling should only be allowed to proceed upon the basis of site specific environmental impact statements supported by adequate regulations.

2. The dSGEIS Is Not Capable of Being Read and Understood by the General Public

The dSGEIS is an informative treatise on hydraulic fracturing, but it does not fulfill the requirements of a generic environmental impact statement. By containing more detail than is appropriate and by being more encyclopedic and not sufficiently analytical, it violates ECL § 8-0109(2) and 6 NYCRR § 617.9(b)(1). The dSGEIS is required to exclude non-relevant information. 6 NYCRR § 617.8(a), (f)(7).

The dSGEIS should specifically and solely focus on the identified environmental impacts, the proposed mitigation measures and alternatives. Background information on the history of gas exploration and other nonessential information must be omitted or moved to appendixes so as to not distract from the issue at hand. 6 NYCRR § 617.9(b)(2). Chapters 3, 4 and 5 of the dSGEIS should be incorporated in either Chapter 2 (Description of the Proposed Action) or Chapter 5 (Potential Environmental Impacts) or be moved to an appendix. The dSGEIS is poorly organized and indexed such that essential information is difficult to locate. By including non-essential information and many “suggestions” that are not required, the dSGEIS has masked the important issues that the dSGEIS should be focused on and provided some with the false idea that the dSGEIS is more protective than it actually is. In fact, the dSGEIS is too long and too technical to be capable of being read and understood by the general public in violation of 6 NYCRR § 617.9(b)(2). The dSGEIS needs to be rewritten to be clear and concise, and to be in plain language. To finalize the dSGEIS as currently constituted would be unreasonable, and an abuse of discretion by the DEC.

3. The Scope of the dSGEIS Was Improperly Limited

The Scope of the dSGEIS violates SEQRA requirements that all elements or phases of a project be considered together in order to ensure that all environmental effects are properly considered. 6 NYCRR § 617.3(g). The DEC was required to include in the supplemental impact statement all specific significant adverse environmental impacts not addressed or inadequately addressed in the original GEIS that arise from changes to the proposed action, newly discovered information, or changes in circumstances relating to the proposed action. 6 NYCRR § 617.9(a)(7). The DEC received numerous industry supported revisions to its basic regulations in 1994 as part of the STRONGER, Inc. review process. The DEC failed to implement any of these recommendations. STRONGER, Inc. must be invited to conduct an updated review of the GEIS and for suggestions on the dGEIS (if deemed appropriate for this unconventional drilling). The 1994 STRONGER review is hereby incorporated in its entirety into this comment. The DEC’s failure to adequately update all aspects of the GEIS that inadequately address current drilling is unreasonable, and an abuse of discretion. Numerous comments by other groups and individuals address additional specific areas that the GEIS fails to address. This comment hereby references and incorporates those comments. Therefore, the DSGEIS violates 6 NYCRR §§ 617.3(g), 617.9(a)(7) and must be subjected to a new scoping process.

4. The dSGEIS Fails to Adequately Address Cumulative Impacts

The dSGEIS fails to identify and discuss the reasonably related short-term and long-term impacts, cumulative impacts and other associated environmental impacts in violation of 6 NYCRR § 617.9(b)(5)(iii). The dSGEIS fails to identify and discuss any growth inducing aspects of the proposed action. In fact, the dSGEIS mentions activities such as the Schlumberger facility in Horseheads as an example of economic growth resulting from natural gas development, but then fails to consider the environmental impact of such growth in direct contravention of the requirements of SEQRA. Even more than a conventional EIS, a GEIS is expected to contain a detailed discussion of the cumulative, secondary and long-term impacts of the proposed action, and the growth inducing aspects. DEC, The SEQR Handbook at 78-80 (1992). The handbook goes on to state that “it is important for the Generic EIS to seek to identify upper limits of acceptable growth inducement to provide guidance to the decision maker.” Numerous comments by other

groups and individuals address cumulative impacts and this comment hereby incorporates them by reference. The failure to address these cumulative impacts violates of 6 NYCRR § 617.9(b)(5)(iii). The dSGEIS must be withdrawn if the DEC is incapable of addressing cumulative impacts and the proposed action must be subject to site specific review.

5. The dSGEIS Fails to Consider Less Environmentally Damaging Alternatives

One of the critical objectives served by a dSGEIS is the consideration of less environmentally damaging alternatives. ECL § 8-0109(2). The DEC failed to ensure that the dSGEIS considers a range of reasonable alternatives including timing, scale or other limiting factors, or simply not proceeding with the proposed action at all. DEC, The SEQR Handbook 64-66 (1992). Numerous comments by other groups and individuals refer to the failure of the dSGEIS to address less damaging alternatives. This comment hereby incorporates those comments by reference. This failure to consider less environmentally damaging alternatives violates the ECL and The SEQR Handbook, is therefore arbitrary and capricious. The dSGEIS must be rewritten to adequately consider less environmentally damaging alternatives.

6. The dSGEIS Does Not Contain Regulations

The dSGEIS fails to resemble in form and content a final SGEIS by containing mostly suggestions rather than requirements. ECL § 8-0109(4). The dSGEIS is required to contain specific conditions and criteria under which future actions will be undertaken or approved, including requirements for subsequent SEQR compliance. 6 NYCRR § 617.10(c). The dSGEIS violates SEQRA by leaving the specific conditions and criteria to individual permit conditions and by not making the requirements for subsequent SEQR compliance clear from the start of the process. To the extent that the dSGEIS contemplates site specific permit conditions, the DEC should not be relying on a generic environmental impact statement. Near complete reliance on site specific permit conditions indicates the need for a site specific environmental impact statement. To the extent that the dSGEIS fails to contain permit conditions, site specific reviews must be required. *See* DEC, Final General Environmental Impact Statement Including Final Regulatory Impact Statement and Final Regulatory Flexibility Analysis for Revisions to 6 NYCRR § 617, at 39 (Feb. 28, 1987). Comments by numerous other groups and individuals reference areas where the dSGEIS contains suggestions or leaves discretion to the drilling operator. This comment hereby incorporates those comments by reference. The dSGEIS must be rewritten to contain regulations and to resemble a final GEIS. The DEC's failure to produce a comprehensive set of regulations for the dSGEIS is arbitrary and capricious.

7. The DEC Improperly Relied on Outside Consultants

While the DEC is allowed (and even encouraged) to rely on consultants, the statute requires that "[n]otwithstanding any use of outside resources or work, agencies shall make their own independent judgment" of the material. ECL § 8-0109(3). In this case, the DEC received the documents that in large part form the basis and substance of the dSGEIS only days before the release of the dSGEIS. There was clearly insufficient time for the DEC to

review, analyze and reach its own conclusions about the materials prepared by its consultants.

Furthermore, the dSGEIS fails to contain a cover sheet stating the “names of individuals and organizations that prepared any portion of the statement.” 6 NYCRR § 617.9(b)(3)(v). In addition, the missing cover sheet also fails to show the date of the formal acceptance of the dSGEIS by the DEC. 6 NYCRR § 617.9(b)(3)(vi).

The dSGEIS must be withdrawn and the DEC staff given adequate time to review and analyze the consultants’ reports. The dSGEIS must be rewritten to comply with SEQRA.

8. The DEC Has a Conflict of Interest in Preparing the dSGEIS

The DEC’s role as both promoter of natural gas exploration and of environmental conservation are inherently incompatible as a matter of law. The DEC must appoint an independent party or agency to develop the dSGEIS. *Washington County Cease, Inc. v. Persico*, 120 Misc. 2d 207, 465 N.Y.S.2d 965 (Sup. Ct. Washington Co. 1983), *aff’d* 99 A.D.2d 321, 473 N.Y.S.2d 610 (3rd Dept. 1984), *aff’d* 64 N.Y.2d 923, 488 N.Y.S.2d 630 (1985). Furthermore, as an agency of the state reporting to the Governor, who stands to reap financial benefits from natural gas drilling, the DEC has direct pecuniary interest in the proposed actions. The DEC must hand over lead agency status to another division within the DEC at a minimum (Water Resources perhaps) or to another outside group. The dSGEIS must be withdrawn.

9. The dSGEIS Omits Required Elements

- a. The dSGEIS fails to contain a concise description of the social considerations of the proposed action in violation of 6 NYCRR § 617.9(b)(5)(i).
- b. The dSGEIS fails to contain a concise description of the environmental setting of the areas to be affected, sufficient to understand the impacts of the proposed action and alternatives in violation of 6 NYCRR § 617(b)(5)(ii). The discussion of water resources is included in this section, but there is no discussion of the state forests, wildlife habitats, residential areas, farm land and other environmental areas that will be affected by the proposed action.
- c. The dSGEIS fails to contain a section that outlines those adverse environmental impacts that cannot be avoided or adequately mitigated if the proposed action is implemented in violation of 6 NYCRR § 617.9(b)(5)(iii)(b). Any such discussion is buried in the overall mitigation Chapter and thus the dSGEIS fails to meet the requirement that such adverse impacts be clearly identified.
- d. The dSGEIS fails to contain a clearly identified section on growth inducing aspects of the proposed action in violation of 6 NYCRR § 617.9(b)(5)(iii)(d).
- e. The dSGEIS fails to contain a clearly identified section that discusses the impacts on the proposed action on the use and conservation of energy in violation of 6 NYCRR § 617.9(b)(5)(iii)(e). The dSGEIS must consider a life cycle analysis or cradle to grave analysis of unconventional shale gas drilling to determine the true energy inputs and outputs of this energy source from

exploration activities to consumer use, including chemical production, pipeline production, pipeline construction, emissions of methane in flaring, distribution, pipelines.

- f. The dSGEIS fails to clearly consider the impact of the proposed action on solid waste management as required by 6 NYCRR § 617.9(b)(5)(iii)(f). The dSGEIS includes some consideration of waste water treatment, but makes no substantive analysis of the means to properly dispose of hazardous drilling cuttings and sludge from waste pits.
- g. The dSGEIS fails to consider as alternatives changes to the design of drilling rigs or compressor stations or postponing development of this resource until adequate information is available to assess the true environmental cost in violation of 6 NYCRR § 617.9(b)(5)(v). The dSGEIS fails to adequately consider phasing, limits to scale or magnitude.
- h. The dSGEIS fails to contain an analysis of reasonably foreseeable catastrophic impacts to the environment that could occur from traffic accidents of trucks containing fracturing chemicals, railroad accidents from trains carrying fly-ash, pipeline explosions or drilling rig explosions in violation of 6 NYCRR § 617.9(b)(6).
- i. The DEC failed to make the referenced documents in the dSGEIS readily available for public comment in the same places where the agency made available copies of the EIS.

The dGEIS must be rewritten to include these required elements. The failure of the DEC to address the required elements is arbitrary and capricious.

10. The DEC Failed to Give the Public Reasonable Time to Consider the dSGEIS

The DEC has a mandate to make every reasonable effort to include the public in the SEQRA process. 6 NYCRR § 617.3(d). The DEC failed to hold adequate public hearings on the proposed action as evidenced by the many members of the public who were unable to speak at the DEC hearings and the limited geographic scope of the hearings. Furthermore, the time period allotted to the public to respond to the dSGEIS is insufficient to allow the public to work with experts to develop the information required to fully respond to the dSGEIS. Furthermore, by initially limiting the distribution of the dSGEIS to internet download and only providing a limited number of hard copies to a limited number of facilities, the DEC violated the rights of those living in rural areas without high speed internet, high volume laser printers or cars capable of traveling long distances to view a public copy. Finally, in only providing the dSGEIS on the internet for a substantial portion of the comment period, the DEC violated 6 NYCRR § 617.12(b)(3), (5).

In enacting SEQRA, the Legislature emphasized the importance of public participation and the right of citizens to contribute to the protection of the environment. By failing to make the dSGEIS widely available, the DEC violated SEQRA. Furthermore, given that the proposed action in this case has the potential to affect a vast number of citizens, the “public is the primary source of identifying the community service and human resource impacts of a generic action.” DEC, The SEQRA Handbook 80 (1992). Numerous comments by other groups and individuals request more time for commenting. This comment hereby

incorporates those comments by reference. The DEC's failure to include adequate public involvement in the dSGEIS is arbitrary, capricious, and an abuse of discretion. The comment period for the dSGEIS must be extended so as to comply with SEQRA.

11. The dSGEIS Segements Review of the Proposed Action

It is contrary to the intent of SEQRA to consider only a part or a segment of the action. 6 NYCRR § 617.3(g)(1). The dSGEIS ignores the impact of gathering lines, construction of roads on site, repair of roads off site, the construction of pipelines and compressor stations, the construction of facilities to service gas wells and increased traffic, among others. Numerous comments by other groups and individuals discuss these impacts. This comment hereby incorporates those comments by reference and states that the failure to address those impacts is improper segmentation under SEQRA. As such, the dSGEIS is unreasonable, arbitrary and capricious. The DEC must revise the dSGEIS to incorporate these aspects of the proposed project.

12. Problems With the Proposed Action that Require Material Reconsideration or Modification Have Been Identified.

The DEC has received a number of comments that have identified problems with the proposed action that indicate the necessity for material reconsideration or modification of the dSGEIS, the Scope, and the GEIS. This comment hereby incorporates those comments by reference. The DEC must withdraw the dSGEIS and address these problems prior to the preparing and filing the final SGEIS in accordance with 6 NYCRR § 617.9(a)(5)(ii).

13. There Is Insufficient Data At This Time to Proceed with Marcellus Shale Drilling

The EPA has noted that while hydraulic fracturing fluid performance became a prevalent research topic in the late 1980's into the 1990's, most study related to the fluids' operational efficiency rather than the potential environmental or human health impacts. The EPA stated that there is very little documented research on the environmental impacts from the injection and migration of these fluids into subsurface formations, soils and USDWs. *See Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*, June 2004, EPA ("EPA USDW Study").

The EPA USDW Study also conducted calculation on coalbed methane formations that compared the volume of space in the fractures and the volume of fluids injected underground. The EPA found that the volume of space within the fracture area may not hold the volume of fluid pumped into the ground during fracturing. The EPA concluded that fracturing fluid must "leakoff" to intersecting smaller fractures and/or fluid moves beyond the hypothetical "edge of fracture zone." This conclusion is supported by field observations in mined through studies which indicate fracturing fluids often take a stair-step transport path through the natural fracture system.

Numerous comments by other groups and individuals address the insufficient data on Marcellus shale drilling. This comment hereby incorporates those comments by reference. The dSGEIS is unreasonable as a matter of law to the extent that it attempts to generically address impacts that are not understood. The dSGEIS must be withdrawn until the geology of the Marcellus Shale and underground hydrogeology is well understood.

14. Specific Comments on the Contents of the dSGEIS

A. Water Issues -- Withdrawals, Use, Disposal, Contamination

- (1) The dSGEIS states that private wells and springs should be used as drinking water sources only as a last resort. There is no discussion about the fact that they are many people's only option. [dSGEIS p. 2-24]
- (2) Drinking water standards only protect against known or anticipated contaminants and therefore will not guard against chemicals that are not historically anticipated to be in drinking water. DEC must make chemical contents public. [dSGEIS p. 2-12]
- (3) Inappropriate reliance on the fact that "No documented instances of groundwater contamination are recorded in the NYSDEC files from previous horizontal drilling or hydraulic fracturing projects in New York." [dSGEIS 2-26] Furthermore, instances of spills from the drilling site cannot be ignored. The review of groundwater contamination was far too limited in scope to be of use. All complaints of water contamination near or around drilling sites must be investigated,
- (4) Water testing must be amended to test for methane and radioactivity. [dSGEIS p. 7-41]
- (5) Local health departments are responsible for addressing and investigating water contamination, which is an improper unfunded mandate. [dSGEIS p. 7-42]
- (6) The dSGEIS proposes that other potential causes have to be ruled out before water contamination cases are referred back to DEC. Presumption is not that problem is caused by drilling. [dSGEIS p. 7-42] The presumption should be that drilling caused the problem. Drilling companies should be required to use chemical markers to identify their chemicals.
- (7) The dSGEIS contains no discussion of impact of 4000 identified wells awaiting plugging or 40,000 unidentified abandoned wells. [STRONGER survey of NY 2006] Yet the dSGEIS notes at Appendix 11, p. 31 "It is theoretically possible but extremely unlikely that a flow path such as a network of open fractures, an open fault, or an undetected and unplugged wellbore could exist that *directly* connects the hydraulically fractured zone to an aquifer." (emphasis added). The dSGEIS must consider this environmental impact.
- (8) The dSGEIS fails to distinguish between drilling waste, flowback waste water and produced water/waste. The DEC acknowledges an incomplete understanding of composition of any of those wastes. DEC has done no testing of these wastes. [dSGEIS 5-101, 6-18, 7-34, 7-50] Nor does the DEC have any idea of potential volumes. [dSGEIS p. 7-90] The dSGEIS must be withdrawn until detailed information exists and has been reviewed by the DEC.

- (9) The dSGEIS provides that water treatment plants are left to their own devices to determine what kind of wastes they receive. "It is incumbent upon the POTW to determine whether the volumes and concentrations of chemicals present in the flowback water or production brine would result in adverse impacts to the facility's treatment processes as part of the above headworks analysis." [dSGEIS 7-59] The dSGEIS must be amended to provide for an agency determination prior to POTW acceptance of drilling waste.
- (10) Road spreading of "produced water" is allowed (although no distinction is made between the differing kinds of wastes and DEC acknowledges no testing has been done.) No road spreading should be allowed.
- (11) Flood Zone maps are out of date so do not provide adequate protection against flooding of gas wells or open pits. [dSGEIS p. 2-35] And yet, severe flooding is acknowledged as a problem. [dSGEIS p. 6-42] Conclusion: Local governments are expected to "consider" this problem but have no authority to implement solutions. The dSGEIS must be amended to provide local governments with siting authority.
- (12) There is no proposed permitting for the 10,000 to 12,000 gallons of diesel fuel that will be stored on site. That is the quantity of gas that an ordinary gas station keeps on hand. [dSGEIS p. 5-23] The dSGEIS must be amended to require permitting for the storage of diesel fuel on site.
- (13) The dSGEIS fails to adequately address large scale water withdrawals. "The concern for aquifer depletion due to increased ground water use in New York is being reviewed and addressed by the DEC." [dSGEIS p. 7-6] But not in the dSGEIS. The dSGEIS must be amended to include mitigation of this impact.
- (14) The only discussion of recycling or conservation of water is the note that "it is beneficial to the operators to implement water conservation practices." [dSGEIS p. 7-78] The dSGEIS must be amended to require water conservation practices.
- (15) Stormwater permits need to be revised, but have not been yet and inspections and documentation of storm water permits is apparently left up to local governments. [dSGEIS p. 7-25]

B. "Centralized Impoundments"

- (1) The dSGEIS proposes that large centralized impoundments of toxic waste would not even be subject to the same regulations as ponds of fresh water. [dSGEIS p. 6-38] Liner requirements will be the same as for landfill leachate, but " as with all environmental containment systems, it is acknowledged that conservative liner requirements alone do not guarantee groundwater protection. Emphasis has to be placed upon facility design....to best ensure[] successful protection of

the groundwater.." [dSGEIS p. 7-52] But none of the "emphasized" items are required. In fact, the DEC points out that above ground storage tanks are preferable, but the dSGEIS does not require them. [dSGEIS 7-55] The dSGEIS must be amended to require above ground storage tanks for all storage of all wastes generated by drilling.

- (2) At p. 2-31 the dSGEIS notes that the region receives more precipitation than evaporation, but fails to address what that means for open pits collecting rainwater over time. [dSGEIS, p. 6-56, pits may be used for up to three years.] The dSGEIS must be amended to address this issue.
- (3) If flowback impoundments are used, the dSGEIS states that it will be necessary to exclude certain solvents and surfactants containing benzene and xylene from frac'ing fluids. [dSGEIS p 7-89] Yet benzene appears to occur naturally in the Marcellus shale and will be present in the flowback whether it is added as a solvent or not. The dSGEIS must be amended to address this issue.
- (4) Despite the fact that "these larger off-site impoundments have the potential to qualify as a major source of Hazardous Air Pollutants (HAPs) due to certain chemicals," the DEC still plans to allow them although maybe, it might require, in some instances "a physical barrier to public access at least 500 feet from the well pad" but only if the applicant is not able to show that specific control equipment will be used to further reduce particulate matter emissions during hydraulic fracturing operations. [dSGEIS p. 7-89] Centralized impoundments must be prohibited.
- (5) It is possible the water in these pits will be contaminated with radioactivity. Yet no studies have been undertaken. [dSGEIS p. 7-103] DEC notes that someone (it does not say who, when or how) should take sampling, analysis, and surveys after production has begun and determine what radioactive material licenses may be needed. The dSGEIS must be withdrawn so that further study of radioactivity may be undertaken.

C. Chemicals

- (1) There is inadequate data on chemicals - Data is on hand for 197 products with complete information on 152 of those. Within the 197 products are 260 chemicals that the DEC had identified and at least 40 that they have not. (dSGEIS p. 5-35) DEC has not considered or investigated the biocides being used -at least one of which (4-nitroquinoline-N-oxide) is used to induce cancer in lab rats. [dSGEIS p. 5-111, 6-92, testimony of Dr. Hays) Appendix 11, p. 32 states that "The solubilities of many chemicals proposed for use in hydraulic fracturing in New York State are not well established or are not available in standard databases..." The dSGEIS must be withdrawn until there is adequate chemical information available.

- (2)** The dSGEIS proposes to wait for an emergency to research some of the chemicals “In the event of environmental contamination involving chemicals lacking readily available health effects information, the toxicology literature would have to be researched for chemical specific toxicity data. [dSGEIS p. 5-65] This information must be available to the public BEFORE drilling starts.
- (3)** Radioactive contamination of drilling equipment and waste is completely unexplored. [dSGEIS p. 5-131] “No state has assessed the occurrence of NORM from longer duration drilling operations at multi-well sites or larger accumulations of shale cuttings from horizontal drilling.” [dSGEIS p. 7-99] However, initial tests show the potential for NORM build up to the extent that NORM waste may require licensing and production water may be subject to limitations as radioactive waste. [dSGEIS p. 7-103] The dSGEIS must be withdrawn until radioactive impacts are fully understood.
- (4)** Synergy, whereby chemicals react with each other and the environment, has not been investigated, so there may be many chemicals produced by the reaction of frac’ing fluids with each other and the environment that result in chemicals that are not being tested for. Benzene is a known carcinogen. Synergy between the flow back and production wastes from different wells must be tested before being stored or treated together.
- (5)** The dSGEIS irrationally refuses to consider “green chemicals” on the basis that “at this time, it may not be feasible to require the use of ‘green’ chemicals because presently there is no metric or chemicals approvals process in place in the US.” [dSGEIS p. 9-10]
- (6)** The dSGEIS conclusion that “the only potential exposure pathway to fracturing additives identified by this Supplement is via air emissions from uncovered surface impoundments used to contain flowback water” is completely unsupported in the scientific literature. The dSGEIS must be amended to consider air pollution impacts from truck traffic, methane flaring, pipeline emissions, compressor station emissions among other sources of air pollution.
- (7)** The dSGEIS states that “For well permit applications that do not propose use of open surface impoundments, the Department proposes to require identification of additive products and proposed percent by weight of water, proppants and each additive. This Supplement has not identified any potential impact other than impoundment emissions that requires full compositional disclosure to the Department for such water-based solutions.” This conclusion is unreasonable and arbitrary. The dSGEIS must be amended to provide for full compositional disclosure to the DEC and the public due to contamination from spills and underground migration.

- (8) The DEC's reliance on MSDS materials for chemical composition of fracturing fluids is misplaced. The information on those sheets is limited only to those chemicals that are required by law to be disclosed. MSDS sheets are designed to provide information to protect those who handle, ship and use the product and to provide information to emergency response crews in the event of accidents or spills. The data in the MSDSs do not take into consideration the health impacts resulting from chronic or long-term, continuous, and/or intermittent exposure. Many chemicals have not gone through a rigorous and extensive scientific peer-review process that would justify conclusions to be drawn about "safe" and "hazardous" exposure levels. Most chemicals used in fracturing fluids have only been tested for lethality and acute toxicity based on short-term contact. The majority have never been tested at realistic, environmentally relevant, chronic exposure levels, or for delayed effects that may not be expressed until long after exposure. For example, most of the chemicals have not been tested for their effects on terrestrial wildlife, birds, fish and invertebrates. *See Analysis by the Endocrine Disruption Exchange, Paonia, Colo.* The byproducts labeled as biocides are the most lethal. When biocides are either spilled at the surface or return with flowback/production wastes, they can endanger workers and those living near the well and evaporation ponds. They can also sterilize the soil and inhibit normal bacterial and plant growth for many years.
- (9) The public has a right to know specific volumes and concentrations of chemicals, how it was used, and when it was used. Each drilling company must provide the DEC and local municipalities with this information and the chemical inventory must be available on line at the DEC's website. The drilling companies must be required to give local officials three days advance notice before adding new chemicals to its operations. The DEC must have the ability to prohibit the use of any chemicals used in drilling unless the chemical has shown to be of human food quality.

D. Greenhouse Gas Emissions – Air Pollution

- (1) The dSGEIS improperly relies on Penn State/industry data that natural gas development will reduce Greenhouse Gas Emissions when this is not clearly the case. [dSGEIS p. 2-6] The dSGEIS must be withdrawn until a life cycle analysis of green house gas emissions from unconventional natural gas drilling has been prepared.
- (2) The dSGEIS determines that "The prohibition of development of Marcellus Shale and other low permability gas reservoirs by horizontal gas drilling and [HVHF] would be contrary to New York State and national interests." [dSGEIS 9-1]; "It would also contravene Article 23-0301 of the Environmental Conservation Law where it is stated:..." [dSGEIS 9-2]; "The Draft 2009 New York State Energy Plan

recognizes the potential benefit to New York from development of the Marcellus Shale natural gas resource.” [dSGEIS 9-3]; and “such a prohibition is contrary to New York statute and State policy advocating development of this resource. A prohibition would also deny owners of mineral interests an opportunity to realize the benefit of mineral rights ownership. It is not a reasonable alternative to development as set forth in this dSGEIS.” [9-3] This conclusion highlights the conflict of interest inherent in the DEC and the necessity for an independent agency to prepare the dSGEIS, if a generic impact statement is allowable at all.

- (3) Air pollution from diesel exhausts, well emissions, and pipeline emissions, and flaring are not mitigated in the dSGEIS.
- (4) The discussion of TEG dehydration units relies upon “industry supplied emission data” and while “impacts are predicted to be above the corresponding standards, no simple mitigation measures were indicated.” [dSGEIS p7-88] The DEC does suggest “the preclusion of public access” to the well pad (although set backs from the public range from 50 to 100 feet) or that “alternative mitigation measures could be defined by industry...” Meaningful mitigation measures must be developed.
- (5) The DEC also notes that it “encourages” participation in the STAR program (but it is not mandatory). [dSGEIS p. 7-92] DEC must require participation in this program.

E. Absence of Actual Rules and Regulations, Funding, Inspections

- (1) Lack of required inspections on the site (pre-drilling and at closure only) when inspection should be required as a deterrent. [dSGEIS p. 1-5, 5-127]
- (2) The dSGEIS proposes to rely on site specific permit conditions and other “existing Department tools” instead of regulations and rules. [dSGEIS p. 3-4, 7-26, 7-53] If site specific conditions are required, then a GEIS should not be relied upon. The DEC notes that if they can make site specific determinations, they don’t need to seek variances. The dSGEIS must contain state wide conditions or be withdrawn for a reliance on site specific EIS’s.

F. Pipelines

- (1) The dSGEIS complete ignores all aspects of pipelines and compressors associated with natural gas drilling, from gathering lines, to loss of habitat and topsoil, setbacks from structures, inspections, shutoff valves and emissions. The dSGEIS must be amended to include these impacts.

G. Cumulative Impacts

- (1) The dSGEIS dismisses Cumulative impacts as too difficult to figure out. [dSGEIS p. 6-145-6]. The Marcellus Shale is acknowledged to be a “blanket play” with 100% success rate yet found to be comparable to the wells drilled in 1985 which were into a limited number of pools or reservoirs and thus had a very low success rate. The dSGEIS must be amended to provide for a cumulative impact analysis.

H. Geologic Impacts

- (1) The dSGEIS admits to a lack of understanding about results of underground fracturing “ICF reports that, despite ongoing laboratory and field experimentation, the mechanisms that limit vertical fracture growth are not completely understood.” [dSGEIS p. 5-89] Analytical techniquesstill imperfect...” [dSGEIS p. 5-90] The dSGEIS must be withdrawn until understanding is complete.
- (2) The dSGEIS contains no discussion or mitigation of drilling into faults or inducing seismic reactions because it is “in the operator’s best interest” to avoid drilling into a fault and they will “endeavor” to be “prudent.” [dSGEIS p. 6-149, 150, 154] In fact, there are instances of drilling into fault lines (See map at ToxicsTargeting.com). The dSGEIS must be amended to prohibit drilling into fault areas.

I. Impacts on Wildlife – Flora – Communities

- (1) Wildlife are expected to just know that the 5 acre open pits of toxic waste are just that and not ponds. [dSGEIS p. 6-48] It is suggested but not required, that operators make pits “unattractive” to wildlife and netting “should” (but not must) be used.” [dSGEIS p. 7-83] Closed loop systems must be required for all sites and all wastes.
- (2) The dSGEIS contains no discussion of impact of pipelines on habitat fragmentation. The dSGEIS must be amended to include this impact.
- (3) The dSGEIS states that a comprehensive plan for dealing with invasive species will be (but isn’t yet) developed. (dSGEIS p. 7-74) The DEC notes that “precautions must be implemented” but doesn’t provide any. [dSGEIS p. 7-78] And after noting that “the safest way to avoid transfer of invasive species is not to transfer water from one waterbody to another.” [dSGEIS 7-78] The DEC must prohibit this practice and the dSGEIS must contain an invasive species prevention plan.
- (4) The dSGEIS does not contain any mandatory visual impact mitigation, but the DEC makes some suggestions that industry can voluntary take or not. [dSGEIS p. 7-104] And DEC “encourages” the operators to review the local land use plan and to try to not site wells in areas where there will be impacts. [dSGEIS p 7-106] The dSGEIS must be amended to make this review mandatory and provide local governments with siting authority.

(5) The dSGEIS notes that “noise is best mitigated by distance” and that drilling is more tolerable during the day than at night [dSGEIS p. 7-107], but mandates no noise buffers or restrictions on drilling times. The dSGEIS must provide for adequate setbacks, baffles and restrictions on drilling times.

Thank you for your consideration of these comments. If you have any questions, I can be reached at 607-277-5935 or at holden.slottje@gmail.com.