



January 11, 2012

Attn: Draft SGEIS Comments
Bureau of Oil & Gas Regulation
NYSDEC Division Of Mineral Resources
625 Broadway, third floor
Albany, NY 12233-6500

Dear Sir or Madame,

The Sierra Club Atlantic Chapter has reviewed the Revised Draft Supplemental Generic Environmental Impact Statement (RDSGEIS) *on the Oil, Gas and Solution Mining Regulatory Program Well Permit Issuance for Horizontal Drilling And High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs* and appreciates the opportunity to comment on the document.

We are a volunteer led environmental organization with 37,000 members statewide, committed to the protection of New York's air, water, and remaining wild places. In the spring of 2008, the Atlantic Chapter campaigned to have the impacts of Marcellus and Utica shale development studied in an official capacity under the State Environmental Quality Review Act (SEQRA). We had grave concerns whether High Volume Horizontal Hydraulic Fracturing (HVHFF) could be executed in a manner that is sufficiently protective of our environmental and community resources. This relatively new form of natural gas extraction was not adequately considered in the 1992 GEIS and we simply asked that a supplemental process be initiated. This request came within the context of the DEC program bill S8169, legislation designed to facilitate the spacing requirements of HVHFF that was making its way through the Legislature. The SGEIS was the resulting compromise of our request when Governor Paterson signed the bill into law.

In a letter to DEC Commissioner Grannis in June of 2008, we specifically requested that the SGEIS should focus on the cumulative impacts of Marcellus and Utica shale development. We envisioned that an assessment of the large-scale implications of drilling in deep shale formations, with full build-out modeling, would provide the structure to better establish impact thresholds, understand resource constraints and guide policy makers in the ultimate decision of whether to allow High Volume Horizontal Hydrofracking to move forward in New York. We believed that an approach based in science would have answered some of the most fundamental questions. Three years and three separate drafts later we have found that the fatal flaws of the original scope of the study still remain – no cumulative impact assessments based upon full build out modeling, no public health risk assessments, and no clear plan for how to deal with all the

drilling waste.

In spite of these fundamental deficiencies the DEC has insisted upon pushing ahead with the creation of new drilling regulations even though the Department has not achieved a foundational understanding of what needs to be regulated. We find that the DEC has placed so much focus on finding ways to advance HVHFF within the State that it has short changed what should have been extensive precautionary studies aimed at determining whether fracking should be allowed at all in New York.

The Sierra Club Atlantic Chapter believes that the substantially incomplete dSCEIS does not comply with SEQRA if it were to be finalized in its current form. Additionally, we reject the legitimacy of the associated regulations that do not fulfill the intent of the State Administrative Procedures Act (SAPA) as a matter of process. The rule-making phase should only commence after all the SEQRA issues have been analyzed and final findings have been issued. The DEC should suspend the review of regulations until the SEQRA process has concluded. It is for this reason that the Atlantic Chapter requests that the DEC review the current round of comments and resubmit another dSCEIS that addresses the outstanding deficiencies. The citizens of NYS deserve the right to review and comment on a complete document.

Sincerely,

A handwritten signature in cursive script that reads "Roger Downs". The signature is written in black ink and is positioned below the word "Sincerely,".

Roger Downs, Conservation Program Manager
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General Comments:

1. The Department of Environmental Conservation (DEC) cannot protect NY's environment from deep shale development through the dSGEIS alone. Many necessary actions relating to mitigation and regulation will require additional legislation, including future budget appropriations for needed staff and regulatory infrastructure. While the DEC has no control over the creation of statute, it should detail in the SGEIS the tools it needs to oversee, if at all possible, proper and safe development. Much of this discussion has been taken out of the SEQRA process and alternatively become the task of an appointed advisory panel, whose deliberations have not been public. Since the staffing, funding, and enforcement of the proposed regulatory structure is instrumental to the effectiveness of any future program, this discussion must be a part of the SGEIS and not discussed outside of the public process. **The DEC should not move forward with HVHFF until all necessary regulatory and statutory tools and controls are in place.**
2. 9 –79 the DEC states that capping annual permits would be an arbitrary policy. *“The Department proposes to limit the number of permits it issues to match the Department’s resources.”* The SGEIS must provide a formula for how many “X” permits are reasonable with “Y” amount of resources. In consideration of the 13,000 active wells the Division of Mineral Resources currently has to monitor and the 45,000 abandoned wells in New York that still require identification and plugging, the DEC cannot ignore these responsibilities as it looks to permit even more wells.
3. The DEC relies too heavily on the 1992 GEIS to mitigate environmental impacts that are not unique to deep shale development, thus not considered in this supplemental process - but are none the less of significant concern. The 20-year-old document is outdated and not consistent with today's understanding of environmental impact and should be revisited.
4. Conversely, the dSGEIS suggests that improvements made to the permitting of Marcellus horizontal applications will not be applied to “low volume” vertical well permitting or other target formations, creating an unjustified imbalance in environmental standards. New permit conditions that are not unique to Marcellus shale development and were ignored in the original 1992 GEIS, like climate change considerations, invasive species mitigation, or best practices, must now be applied to vertical wells. **The DEC must commit to making the findings of the SGEIS consistent with all well permits.**
5. The new rule making process is described as a supplement to the permitting conditions established by the 1992 GEIS. Throughout the 1992 GEIS document the DEC expresses a commitment to creating new regulations based upon the findings of a nearly 10-year SEQRA process. But that rule making process never took place. The advancement of supplemental regulations to foundational regulations that were never enacted creates an uncertain playing field where there are gaps in protection, double standards for Best Management Practices (BMP), and confusion as to what rules are enforceable. **The DEC has an obligation to align its entire Oil, Gas, and Salt**

Solution Mining Program with one comprehensive set of regulations that creates certainty for the public and the oil and gas industry alike.

6. Generic Environmental Impact Statements can be effective tools in streamlining technical specifications or assessing cumulative impacts of many smaller actions or projects. A GEIS however, cannot adequately address impacts that are site specific or locally unique. **The Atlantic Chapter believes strongly that there should be a mandated, site specific EIS for each individual natural gas well pad that allows the public to comment on environmental impacts specific to regional considerations.** While the SGEIS could serve as a guidance document for standardized best practices, a site specific EIS could serve to identify and mitigate impacts to community resources, critical habitat, water withdrawal and disposal, and air quality.

Protecting Water Resources

1. The DEC claims that the issue of cumulative impacts on fresh water resources is addressed by adherence to a natural flow regime protocol. We support careful limitations on water withdrawals, but feel that no protocol aimed at individual withdrawals can supplant the necessity of modeling that addresses cumulative impact of collective withdrawals in a region. Just because each operator will be required to estimate and report maximum withdrawal rates against the ecological water needs of the source water body – doesn't necessarily translate into comprehensive protections. **Collective water withdrawals need to be modeled, at the very least, on a region wide scale that not only take into account the withdrawals of gas drillers, but also the agricultural, industrial, and municipal withdrawals from the same system.**
2. We have concerns that cumulatively, multiple energy companies withdrawing from the same water system will hold the actual passerby flow to the minimum threshold for sustained periods of time because each individual withdrawal event will be viewed in isolation. In other words the DEC is asking drillers not to draw down streams and rivers to beyond a threshold that could lead to the degradation of biodiversity, spawning behavior or hydrological recharge. Under the proposed regulations, however, there will be no requirement to study the effects of long sustained periods of time where water levels will be held to that low, but permissible threshold. **Because of unacceptable risks that water extraction for oil and gas activity presents to our riparian ecosystems, the Sierra Club Atlantic Chapter demands that the DEC ban all water withdrawal from streams and rivers, and limits water acquisition to municipal sources, treatment plants or other sources that have large capacity and little ecological risk.**
3. In addition, there are other aspects of mass scale water withdrawal that cannot be captured by pass by flow regulations alone - like erosion of stream banks from trucks, introduction of invasive species, road deterioration, road kill of sensitive species, and increased likelihood of diesel spills near water bodies.
4. 7-26. While we applaud stringent safeguards against the proliferation of polluted runoff from drill sites as proposed by the DEC's storm water pollution prevention plans (SWPPP), the SGEIS still fails to capture the cumulative effect of all natural gas activities for multiple well sites on erosion, stream turbidity, sedimentation, and

possible chemical contamination. Clearly, there are impacts during construction and disassembly of storm water protection schemes, road construction, pipeline construction, and well pad construction. It is for this the very reason that DEC prohibited HVHHF in Filtration Avoidance Determination (FAD) watersheds – claiming that in spite of the best mitigative practices – no amount of constructed storm water safeguards can protect drinking water from the resulting turbidity and contamination.

"Even with all of the criteria and conditions identified in this dSGEIS, a risk remains that significant high-volume hydraulic fracturing activities in these areas [watershed] could result in a degradation of drinking water supplies from accidents, surface spills, etc." (RDSGEIS Executive Summary, p. 20)

The DEC should clarify why these same threats do not apply to drinking water resources outside of FAD watershed areas. At the very least, the DEC must conduct region wide modeling of likely storm water events for areas that do not receive FAD protections – and analyze and prepare for the cumulative effects of multiple discharges from multiple well pads upon the hundreds of thousands of unfiltered private water wells and municipal reservoirs that serve upstate New Yorkers.

5. 7– 32 In the context of spills on the well pad, we support the DEC requiring disclosure of frack fluid constituents as well as other anticipated industrial chemicals. But the notification and reporting process for spills on oil and gas sites is still lacking. The SGEIS and subsequent regulations should mandate the immediate reporting of spills to DEC conservation officers with criminal penalties for any lack of compliance. In addition, the DEC should require registry of any spill on the statewide, online spills database. The current and inexplicably separate oil and gas database is difficult for the public to access and does not serve the Department well as a comprehensive tool. Through the new regulatory process the DEC should abolish the separate oil and gas spills database and incorporate all future reported spills to the larger statewide database.
6. 6-53 The SGEIS improperly relies upon the absence of information rather than science when it makes the statement, "Hydraulic Fracturing is not known to cause well bore failure in properly constructed wells". How did the DEC calculate the rate of casing failure? (less than 1 in 50 million wells will experience casing failure as a result of hydraulic fracturing) Sierra Club believes there is no credible basis for any current estimation because there is no evidence that any state or federal oil and gas regulator has ever initiated any investigation into whether hydraulic fracturing contaminates ground water to begin with. The Environmental Protection Agency, still in the early stages of its study of hydraulic fracturing, has already found evidence of ground water contaminated from fracking in Pavilion, WY. We anticipate, based upon the thousands of complaints of contamination nationwide, that there are more to come.
7. 7– 33 The SGEIS states that a 10,000-gallon fuel tank is not qualified for a bulk storage permit because of its temporary status on the drilling site. The Department must either set a time limit on "impermanence" or require a bulk storage permit.

8. 7-36 -37 It is still very confusing as to how the Department intends to permit reserve pits in the future. In spite of the fact that the DEC claims that steel tanks should always be used – (section 7-1.9 appears to ban pit liners) the SGEIS still contains more than a dozen references to pit liner specifications. If the DEC believes that pits are inappropriate for flow back, then drill cuttings present too much of a puncture risk and should not be allowed either.
9. 7-39 Steel tanks must also be required for vertical wells. The SGEIS suggest that any well using less than 300,000 gallons of water are only subject to the permit conditions under the 1992 GEIS, which favors open pits. Allowing pits to be employed under any circumstances is unacceptable. Steel tanks are superior to lined pits in spill reduction, air emissions, and wildlife protection. There is no context in oil and gas development where an open pit cannot be replaced with a closed tank. **The SGEIS must end the use of lined pits for everything except pre-drilling fresh water impoundments.**
10. 7- 40 the DEC draws an illogical distinction between principal and primary aquifers when discussing the protection of water quality. Regardless of what population density is served by an aquifer the mechanism of protection should be identical. By suggesting that principal aquifers deserve less protection because they serve a secondary human purpose, the DEC condemns future New Yorker to more resource constraints when potable water supplies may indeed become scarce. The DEC must be forward thinking in all its proposed mitigation.
11. 7-42 All drinking water Wells within 1 mile of drilling sites should be monitored. The Department suggestion of 1000-foot radius from the well site is grossly inadequate considering past contamination problems in New York. In addition there is no discussion of impacts to groundwater during the initial drilling phase, before protective casing is in place. Drilling muds do not completely seal off the pathway of methane (both thermogenic and biogenic) and brine to groundwater resources.
12. If HVHFF is to move forward the DEC should consider requiring the drilling of test wells to 800 ft at varying intervals, ranging from 150 ft from the well bore to the furthest distance possible within the spacing unit, to monitor – using sondes or other testing equipment –the real time effects of drilling within the water table.
13. 7-36 The SGEIS establishes an open pit volume limit of 250,000 gallons for drill cuttings/fluids. This seems like an excessive amount just to accommodate cuttings. 5-34 of the SGEIS estimates that a 7,000 foot well bore combined with a 4,000 lateral will produce 217 cubic yards of cuttings or 44,000 gallons. This appears to be at the upper limit of what is to be expected for a single well. Section 5.2.3 details the tanks and recirculation apparatus for drilling muds and suggests that all liquids are recycled into the drilling process and cuttings are separated – so there shouldn't be that much liquid waste in the reserve pits. Why does the DEC allow for as much as 200,000 gallons of over capacity for open reserve pits?
14. 7-61 The DEC should require mandatory monthly filings of *Drilling and Production Waste Tracking Forms* so that the public can observe effectiveness through the FOIL process. The current proposal would have waste haulers self-monitor and provide tracking information only upon the DEC's request. If the DEC chooses not to request records from haulers, the public has no redress under the Freedom of Information Act to stay informed. Ultimately, it will be to the DEC's benefit to systematically track

and record the movements of drilling waste so that the Department can analyze trends, identify problems, and effectively provide alternatives. Monthly filing of the DPWT form must be mandatory.

15. 7-60 Produced brine cannot be reasonably considered for a Beneficial Use Determination (BUD) as a road-spreading agent because of the significant risk of contamination from heavy metals, non-target salt intrusion, and potential VOC components. The Department's suggestion of pre-testing of brines before use on roadways will be difficult to enforce and will be subject to abuse. The dubious benefit of an ineffective de-icing agent cannot outweigh the clear risk presented by the misapplication of contaminated drilling waste. In general, the Department should not attempt to regulate or permit extraneous aspects of hydrofracking that are not essential to the process, but present significant risks if not properly managed. (Other examples: pit liners, set back variances, wastewater disposal at POTWs, open pits for centralized flow back.)
16. The SGEIS must give an accurate picture of New York's wastewater treatment deficiencies. Of the 134 wastewater pre-treatment plants listed in the dSGEIS as viable disposal centers, only three accept waste "flow back" water from the natural gas industry and in a limited capacity. It is improper for the document to create the illusion that there are significant treatment options. The proposed requirements for Publicly Owned Treatment Works (POTWs) cannot be reasonably met by any facility in NY, in any sustained capacity. While we appreciate the increased standards and a concentration on the remediation of Total Dissolved Solids (TDS), it would be much clearer and effective for the DEC to declare that POTWs cannot take any production wastes, period. With constraints to DEC inspection and enforcement, it is unreasonable to suggest that municipal treatment works, plants that were not designed to take these wastes, will be successful in achieving compliance.¹ Consistent violations and harmful discharges seem to be a more likely outcome.
17. DEC has estimated that there is a 36.2 billion dollar deficit in New York's wastewater infrastructure needs over the next 20 years and this is all before we factor in the burden of Marcellus wastewater remediation. *Environmental Advocates of New York* in their ground breaking report Permission to Pollute documented that "...the DEC has "administratively renewed" or rubberstamped 90 percent of the permits in need of renewal instead of substantively reviewing the performance of these facilities and the impact their pollution may have on the state's lakes and streams." The DEC simply does not have the staff or funding to administer a pretreatment program for gas production wastes that would be sufficiently protective of our waterways.
18. 7-61 The DEC should ban all open centralized flow back impoundments – not create a separate State environmental quality review act (SEQRA) process that could possibly facilitate their use. The 2009 dSGEIS clearly illustrated that the air emissions from these large impoundments would create unacceptable public health

¹ Urbina, Ian. "Regulation Lax as Gas Wells' Tainted Water Hits Rivers." *The New York Times*. February 26, 2011. Print.

- risks. The DEC should once and for all remove any possibility of open pits for flow back rather than leaving open a back door to this dubious practice.
19. 7-65 The SGEIS should provide more information about the correlation between deep injection disposal wells and earthquakes. There has been increasing seismic activity in Ohio²³, Texas and Arkansas in regions not know for earthquakes⁴ that have significant deep injection wells for fracking wastes.
 20. 7-75 Site-specific SEQRA reviews for wells within 150 feet of watercourse should not be allowed. Hard buffers should be honored. In establishing a 500-foot buffer from a drinking water supply, or a 150ft setback from a watercourse slope must be considered in the buffer determination. 150 feet on the flat is not the same as 150 feet over a 20% grade. Additional set back should be provided to a well pad sited uphill of any water body or drinking water resource.

Watershed Protection

The ban on fracking in NYC and Syracuse watersheds is a declaration of unacceptable risk for fracking in general. The SGEIS provides no clear scientific rational why the decision to ban HVVHF from the New York City and Syracuse drinking watersheds should be separated from the protection of other drinking water resources. Syracuse and NYC's water, like much of rural New York, is so pure that it goes from reservoir to kitchen faucet, unfiltered. The EPA closely monitors the City's water quality under a permitting structure called a Filtration Avoidance Determination (FAD). If at some point in time water quality standards cannot meet public health requirements the EPA will order that filtration plants be constructed as an alternative – a mandate that comes with a multi-billion dollar price tag. In the past year, EPA made it clear to the DEC that it will rescind the FAD if the POSSIBILITY of drilling is present in the watershed, rather than waiting for the first instance of contamination.

The Sierra Club understands that the DEC must ban drilling within the FAD boundaries or else incur the immediate costs of filtration⁵. But the official justification for the ban, written in the SGEIS, is that the sum total of drilling activity – the construction of access roads, well pads, and the movement of millions of gallons of potentially hazardous wastes - presents an unacceptable risk to water quality. If that that is the case – then how can the practice be justified for any other region of the state? Millions of New Yorkers within the drilling zone get their water from their own private unfiltered water wells – but do not have the benefit of EPA monitoring or protection and no amount of mechanical

² Niquette, Mark. "Fracking has Formerly Stable Ohio City Aquiver Over Spate of Earthquakes." *Bloomberg*. December 14, 2011. Print.

³ Orr, Steve. "Hydrofracking Sparks Earthquake Concerns." *The Ithaca Journal*. November 15, 2011. Print.

⁴ Palmer, Kim. "Ohio Earthquake Was Not a Natural Event, Expert says." *Reuters*. January 3, 2012. Print.

⁵ Dicker, Fred. Interview with DEC Commissioner Joseph Martens. "Live from the Capital with Fred Dicker." September 19, 2011.

filtration can adequately remediate the chemicals⁶ that are in the fracking fluids.

Protection of water resources should be held to one consistent standard.

But even within the context of protecting FAD watersheds, the DEC fails to adequately provide safeguards. The SGEIS and new regulations do not prohibit low volume hydraulic fracturing or other types of oil and gas extraction from FAD watersheds in spite of the fact that these extraction methods may have a greater surface impact and contribute more to erosion and turbidity. The SGEIS (7-68) also short changes protections on infrastructure for drinking water transport. It is hard to understand the confidence the DEC has in a 1,000 ft buffer from the NYC aqueduct when the horizontal drill bore can extend 5,000 ft or more underneath critical drinking water infrastructure. The DEC has argued the case that the thousands of feet of rock formation between gaseous target formations and groundwater resources is sufficient to prevent migration of gasses and fracking fluid. But the DEC has little or no information on subsidence of formations or fractures that could come from fracking activity even if there is no communication of fluids. With the fragility of an already crumbling NYC aqueduct, horizontal well development should not be allowed anywhere near the infrastructure of New York's drinking water.

Protecting Freshwater Wetlands from Drilling

1. 7-76 The dSGEIS states that Article 24 of the ECL establishes a protective buffer of 100 feet from a wetland's edge and the DEC Freshwater Wetlands Program will oversee any wetland disturbance associated with gas development through the Article 24 permitting program. The dSGEIS notes that the DEC only protects wetlands 12.4 acres and larger or smaller wetlands of unusual local importance. What is not made clear is that these categories represent about 6% of the State's wetlands under DEC protection.
2. The majority of wetlands in NY State are regulated by the Army Corps of Engineers (ACOE) or receive no protection because of the 2001 SWANCC decision that has removed protection of "isolated wetlands". Complicating the issue further is that the DEC only has jurisdiction over wetlands that have been charted on official DEC maps and there are thousands of wetlands statewide, larger than 12.4 acres that have never been mapped.
3. Natural gas exploration will drive development into remote areas where we suspect there are gaps in NYSDEC wetlands mapping. Currently, we estimate that there are over 700,000 acres of potentially jurisdictional wetlands in NY that remain unmapped. We have concerns that the DMR will not protect unmapped wetlands from oil and gas development. The DMR has stated publicly that it is the driller's responsibility to notify the ACOE if a federal wetland is to be disturbed and will not get involved if there are no DEC jurisdictional issues present.
4. The SGEIS must require that the DMR notify the ACOE of any potential wetland conflicts in a drilling application and withhold any permits until the ACOE is satisfied that a proposed well is in compliance with federal wetland protection laws.

⁶ Nearing, Brian. "Scientists: Drilling threat to Water." *The Times Union*. September 16, 2011. Print.

In addition, if a well site investigation reveals an unmapped wetland larger than 12.4 acres that could be disturbed by drilling activity; the SGEIS must mandate a map amendment process and the wetland should be treated as “under the jurisdiction of the NYSDEC.”

5. The SGEIS’s proposed 150 ft. well pad set back from a perennial or intermittent stream, storm drain, lake or pond –still appears inadequate and insufficiently differentiated from the necessity of a 500 ft. buffer from drinking water wells. In this context it is irrational not to also provide wetlands with a 150ft. buffer instead of relying on the existing 100 ft. setback in current regulation. Oil and gas development provides a significantly higher risk to wetlands than other land use disturbances. Does the DEC really regard our most sensitive aquatic ecosystems less deserving of protection than a storm drain? Ultimately, the Sierra Club feels that setbacks from all surface waters should be consistent with the protections given drinking water wells –500 ft- and that 150 ft is not nearly protective enough.
6. **The Sierra Club recommends that the DEC provide a 500ft buffer from the gas well pad to all classes and jurisdictions of adjacent wetlands.** At the very least, wetlands deserve the same protections as storm drains. In addition, we demand that the new regulations require certification in the permit application that the driller has satisfied its obligation under the Clean Water Act and that the chosen well pad site does not require a 404 permit from the Army Corps of Engineer’s for potential wetland disturbance.

Protecting Ecosystems and Wildlife

The revised draft SGEIS provides significantly new analysis of the impacts of oil and gas development upon biodiversity from the sparse recognition of risk presented in the 2009 draft. We deeply appreciate the work of the Division of Lands and Forests on these revisions and hope that the stark conflicts between habitat integrity and gas development expertly articulated in the draft SGEIS will eventually translate into a policy with actual protective strategies for our remaining wild places.

1. Perhaps the greatest mitigation provided by the SGEIS for impacts to biodiversity is the ban on all drilling –not just HVHFF – in state park and forest land. We applaud this restriction and see it as an essential component to preserving NY’s wilderness legacy. We do feel however that there has not been enough analysis to properly address the impacts on biodiversity from the decision to allow the subsurface mineral rights to be leased to companies that will drill horizontally under parkland to access natural gas. Through modeling, mapping, and site specific investigation the DEC must answer these basic concerns:
 - a. Will the leasing of subsurface rights to state forestland lead to dense development surrounding our parks and reserves? Will a tight network of well pads and pipelines cut off migration corridors between protected lands and larger blocks of significant habitat?
 - b. Will increased natural gas development surrounding our parklands lead to secondary environmental degradation of parklands like decreased air quality, excessive noise and light pollution, contaminated waterways from

accidental spills, excessive road kill from migrating animals and increased invasive species vectors?

The Sierra Club believes that the DEC should end all plans to lease any portion of state forestland because the secondary impacts from drilling on the parks periphery will have a significant and unacceptable impact on these reserves habitat integrity even if the core is protected.

2. The DEC is faced with a daunting task of protecting the state's biodiversity in the wake of the massive projected grid work of well pads and pipelines. As we understand it – DEC staff has identified Forest Focus Areas and Grassland Focus Areas as the most likely habitat types to support rare species and the most efficient “catch all” to trigger site specific review of biodiversity in an application to drill. The Sierra Club feels that every application to drill should come with the requirement for site-specific biological reviews – but if the DEC is set on limiting that requirement to 150-acre forest blocks and 30-acre grassland blocks it should also include any application to drill within 500ft of a federal wetland. Wetlands, as the DEC well knows, present just as much potential to support rare species as large forest and grassland blocks.
3. We wholeheartedly support the pre-development flora and fauna surveys, required monitoring and reporting, and review of best management practices – but there is no underlying sense from the SGEIS and no mention in the proposed regulations of what this information will actually mean in terms of implementation. Will projects be stopped out right if there is a conflict with threatened or endangered species? Does the SGEIS have any teeth at all to change or alter the development of a gas well based upon the findings of a pre-development survey? The SGEIS and subsequent regulation should contain enforceable plans of action and parameters that would inform absolute prohibitions from oil and gas development when faced with threats to biodiversity.
4. The SGEIS should make it clear that the act of developing Forest and Grassland Focus Areas should not be able to carve up and diminish the sizes of other adjacent areas which may require protection from future development. The DEC must employ a landscape vision to habitat protection and weigh future cumulative development in every individual permit.
5. The SGEIS still relies too much upon the scant recommendations of the 1992 GEIS to protect wildlife. While the listing of potentially impacted habitats (1988 GEIS8-38) is an appropriate action, the GEIS stated that, “*The Majority of the Significant Habitats in or near existing oil and gas fields fall into one of the following categories:*” and then lists: 1) Heronries, 2) deer wintering areas, and 3) uncommon, rare and endangered plants. This sparse selection of non-threatened species and a general plants category does not constitute a “hard look” at issues of biodiversity. We appreciate the new approach of reviewing forest and grassland focus areas – but we still encourage the listing, mapping, and analyzing of all affected habitats.
6. The summary of the conflict between critical habitat and gas drilling (1988 dGEIS 6-14) offered that other DEC divisions and agencies might play a role in charting

species and critical environmental areas. But there is little indication of how DMR will coordinate with other DEC divisions and agencies during the permit application process. We are told that the DMR has only investigated habitat considerations in the past when a permit to drill comes into conflict with information found on the Natural Heritage Program (NHP) database. This is a good first step, but we believe that:

- a. The NHP database reflects important information on biodiversity but can be regionally incomplete and should not be substituted for an in-depth site inspection. Well development predominantly occurs on private land, while the majority of information in the NHP database comes from observations made on public land.
 - b. Due to budget constraints the NHP database has not been updated since December of 2008. In addition there is a sizable backlog of information from herbaria (plant survey) collections statewide that cannot be processed due to funding constraints. The database alone, based upon being incomplete, should not be the determining factor in assessing potential impact to critical habitat.
 - c. On site investigation should be required for every well application, with complete biological inventories.
 - d. The DEC's current approach, even with capturing applications that impact habitat blocks, does not address region wide biodiversity issues that take into account a pattern of cumulative impacts that may not be apparent on the individual permit level.
 - e. There is no substantive discussion of mitigation strategies for the habitat impacts of the oil and gas industry beyond well relocation and potential seasonal restrictions.
 - f. Natural gas development should be driving information for the NHP database so that at the very least, the destruction of habitat through well development and pipeline corridors will generate information helpful in planning the protection of the larger ecosystem.
7. As outlined in our comments on cumulative impacts, the DMR should have coordinated with other DEC division and Involved Agencies to overlay maps of critical habitat, flyways, and endangered species information over potential gas and oil fields to identify areas of conflict and devise region wide mitigation and planning.
 8. The dSGEIS offers important changes to current permit conditions involving invasive species for which there was no discussion or analysis in the 1988 GEIS. The vast grid work of roadways, pipelines, and staging areas that is requisite for the gas industry provides long conduits of disturbance for exotic plants to take root and invasive invertebrates to travel. Truck tires are effective vectors for spreading seeds and mobile water tanks are purveyors of foreign algae. The new permitting requirements suggest on-site inspection and removal of invasives as well as long term monitoring. If that is indeed the new protocol, it would seem equally important, and feasible to include a full biological inventory of impacted sites that takes into account all species of concern, not just invasive species.

9. Hydrogen sulfide releases during drilling and venting/flaring events can be significant and monitoring equipment indicating unsafe exposures typically protects industry workers from what can be potentially hazardous conditions. Wildlife, in general, is not forewarned of H₂S or other hazardous air emissions and must be thoughtfully considered when siting a well. Anecdotal evidence in Chemung County suggests that a mid winter flaring event lead to lethargic diurnal flights of bats on adjacent properties. The DEC must conduct site surveys to ensure that endangered bats as well as other species of concern are not adversely affected by degraded air quality cause by gas operations.
10. The SGEIS should include a specific protocol to prevent the migration of invasive algae and invertebrates by industrial water trucks. Species like “golden algae” (chrysophyceae) should be listed on page 6-84.
11. The SGEIS should list the Emerald Ash Borer (EAB) as an invasive species of concern. The Animal and Plant Health Inspection Service (APHIS) confirmed the identification of EAB for the first time in New York in Cattaraugus County on June 16, 2009. The detection was the result of USDA Agricultural Research Service personnel familiar with the EAB. Due to the close proximity of the infested site in Cattaraugus County, Chautauqua County will also be included in the quarantine area. Natural gas operations can contribute to the Emerald Ash Borers proliferation through both incidental transport on the thousands of truck trips generated per well, and the vast pipeline corridors that will fragment and weaken forested ecosystems. The SGEIS should propose an action plan to lessen the impact of the natural gas industry as a spreading agent of this and other economically and ecologically devastating invasive invertebrates.

Protecting Air Quality

1. In general, the dSGEIS’s concentration on the air quality impacts of the individual well fails to serve the ultimate purpose of a generic impact assessment process. DEC is required under SEQRA to undertake cumulative impact analysis to gauge, as a whole, the impact of the tens of thousands of wells projected to be developed in Marcellus shale.
2. On October 8, 2009, the EPA found that the Colorado Department of Public Health and Environment (CDPHE) had not adequately explained its failure to aggregate commonly owned gas wells with a compressor station for Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs. They also found that CDPHE must further analyze all wells and other activities operated by the permittee in the Wattenberg field and determine whether they must be combined into a single source. This recent decision comes into conflict with the assessment approach taken in the dSGEIS, and clearly indicates that the DEC is obligated to cumulative impact analysis.
3. On December 6, 2011, Pennsylvania’s Department of Environmental Protection (DEP) sent "initial" notifications to the natural gas industry requiring the submission of 2011 emissions inventories. The data will be submitted to the U.S. Environmental Protection Agency (EPA) by December 31, 2012, in accordance with 40 CFR Part 51 (relating air emissions reporting requirements). Production, operations and emissions data should be submitted to DEP by March 1, 2012.

- The development of the first ever emissions inventory for the gas industry will allow the DEP to compile an accurate emissions inventory for air quality assessments in the Marcellus Shale region and planning activities for attaining and maintaining health-based standards. New York should wait for the results of this inventory before committing our own air quality to unacceptable risk.
4. Concentration on localized emissions from the individual well operation must not preclude an analysis of the mobile emissions generated by that well, away from the site, and the impact of the exhaust on the greater region. This is necessary even within the narrow confines of the study presented by the DEC that does not include cumulative impacts.
 5. 6-176 The DEC claims that it is not required to assess the air quality impacts of mobile emission sources (trucks) when they are off the well pad, because federal law exempts the states from independently regulating emissions from automobiles. The DEC is confusing permitting jurisdiction with its obligation under SEQRA to assess all primary and secondary environmental impacts. The DEC must go back and model the cumulative impact that the thousands of truck trips, per well pad, will have on New York's air quality.
 6. The dSGEIS acknowledges gas line compressor stations as significant emitters of NO₂, SO₂, particulate matter, CO₂, formaldehyde and other non-criteria combustion emissions but fails to offer any qualitative or quantitative analysis of local or cumulative impacts. The mere suggestion of altering stack height to mitigate local air quality impacts is grossly insufficient.
 7. The DEC claims that fugitive air emissions from secondary gas extraction equipment and feeder pipelines are difficult to quantify. Instead of attempting to assess these emissions, the DEC alternative proposes to eliminate leakage pathways through various mitigation protocols. We maintain that the DEC should be doing both. How can you establish mitigation without understanding what are the most persistent sources of fugitive emissions?

Geology

1. The SGEIS is primarily a document that analyzes the environmental impacts of Marcellus shale development. There is comparatively very little information about the Utica shale and its properties in the SGEIS. **The DEC should declare that the SGEIS is an environmental review for Marcellus development alone and any future applications to drill in the Utica formation must first conduct an individual EIS.** Alternatively, the DEC could revise the geological data in the SGEIS to reflect a deeper understanding of the environmental impacts of Utica Shale development.
2. The dSGEIS does not provide sufficient commentary in Section 2 (geology) to subsurface fracture systems or known brittle geological structures within the sandstones and shales that separate the Marcellus layer from potable groundwater resources. Industry officials have argued that while such geological faults do occur, they correspond with depleted gas reserves and will not be economically viable areas for well development. The Atlantic Chapter is not convinced that such faults only correspond to depleted gas reserves and is unsatisfied with the notion, in any case, that the sole protection against drilling in subsurface linear fractures is a voluntary

economic decision. The SGEIS must establish a protocol by which problematic faults and fissures can be identified and avoided. In addition, there is concern that high pressure fracturing of Marcellus shale may not travel in as controlled a fashion within the target formation and may seek out unanticipated faults and fissures.

3. Gravel is an essential resource to the development of high volume horizontal hydraulically fractured gas wells, because of the required road development/maintenance needed to accommodate the thousands of industry trucks. In many remote localities it is economically advantageous for a driller to utilize local gravel pits or encourage a leaseholder to develop an on-site gravel mine. The SGEIS must identify areas of NY with the geological potential for gravel production and assess the cumulative impacts associated with the potential creation of hundreds of new mines. Impacts to consider range from habitat fragmentation to groundwater contamination.

Radon in Natural Gas Derived from Marcellus Shale

As part of the impact analysis for Marcellus gas production in the SGEIS and associated regulations, the DEC should initiate testing to determine if the concentration of radon present in the natural gas distribution system (i.e., commingled with the gas) is a significant risk to customers through out New York. The Sierra Club believes that there may be an unacceptably high risk to radon exposure in households that consume gas from New York's Marcellus shale region because of the gas's relatively short transit time, from well head to kitchen stove. Marcellus gas, when produced by New York or Pennsylvanian wells and delivered by pipeline to customers in New York, has a shorter transit time than Texas or Louisiana gas delivered to those same customers. This shorter transit time is important because of the short (3.83-day) half-life of radon. A higher percentage of the radon in natural gas coming to New York customers from New York or Pennsylvania wells will survive the journey through the pipeline and be able to enter residential living spaces from unvented appliances such as gas stoves. New Yorkers need some assurances that this new gas supply will not lead to increased lung cancer deaths and other problems associated with radon exposure. **The DEC needs to conduct a risk assessment that 1) tests gas for radon levels at the well head 2) integrates that information into the SGIES and 3) creates a mitigation/ prevention strategy through regulatory action and radon-removal strategies.**

Cumulative Impacts

1. The study of cumulative impacts is an integral and required part of any EIS conducted under SEQRA. *ELC §617.9(b)(5)(iii)(a) An EIS must contain: Reasonably related short-term and long-term impacts, cumulative impacts and other associated environmental impacts.*
2. The 2009 dSGEIS acknowledged the importance of cumulative impact analysis;” *Though the potential for severe negative impacts from any one site is low, when all activities in the State are considered together, the potential for negative impacts on water quality, land use, endangered species and sensitive habitats increases significantly” [dSGEIS p. 6-141].* But the DEC denied Department obligation to

conduct this study based upon uncertainty of formation productivity and unpredictable natural gas prices [dSGEIS p. 6-145]. This conclusion was unreasonable considering that the dSGEIS provided glowing predictive analysis of the cumulative economic benefits of drilling in Broome County [dSGEIS 2-2] under the subheading of Public Need and Benefit.

3. The September 2011 rdSGEIS has removed all the 2009 references to the DEC's obligations to conduct cumulative impact analysis and has instead scattered, throughout the document, examples of proposed mitigations that could lessen the severity of cumulative impacts. These mitigations are selective and neither help understand the enormity of the proposed impacts of Marcellus shale development nor fulfill the requirements of SEQRA
4. As part of the SGEIS analysis the DEC commissioned a study of the Socioeconomic impacts of expanded natural gas drilling that portrays, with little nuance, gas development as a job creating juggernaut. The study failed to acknowledge basic economic concerns of the boom and bust cycles of extractive industries, losses to competing industries like tourism or agriculture, the lending crisis associated with gas leased properties, or the externalized costs born on communities from gas development. It did, however, do something remarkable in that it used long term predictive modeling, in several phases, to demonstrate the cumulative economic impact of drilling over three separate regions of the state for a thirty-year period. For years now, the DEC has been arguing that it could never conduct a cumulative environmental impact analysis because the future course of gas well development would be impossible to predict. It would appear that if the task can be done to generate rosy economic numbers from mapping theoretical well development, it can also be employed to get a sense of how air quality will be affected, how much capacity the state will need to treat millions of gallons of frack fluid, or how much sensitive habitat and biodiversity we will lose as a result of the fragmentation coming from pipelines and well pads. DEC needs to conduct full build out modeling to understand the impact of the thousands of projected wells on our air, water, ecosystems and communities. The sole focus from DEC, at this point, remains on the impact of the individual well pad and we are missing a significant part of the picture.
5. The purpose and value of a generic environmental impact analysis is to both streamline assessment of impacts that can be mitigated in a standardized fashion and to capture cumulative impacts that would not otherwise occur in an individual permitting application. Refusal to conduct this analysis negates much of the benefit of a generic process and renders the dSGEIS as fatally incomplete.
6. In July of 2008, the Sierra Club Atlantic Chapter requested that the DEC conduct a cumulative analysis that would include:
 - a. A full build out model of the potential Marcellus gas field, including temporary roadways, pipelines, well pads and staging areas based upon spacing requirements and geographical constraints.
 - b. Mapping overlays of the potential Marcellus gas field that include: ground water resources, aquifers, wetlands, critical habitats, naturally occurring radioactive deposits, air quality attainment areas as well as waste water infrastructure, transportation infrastructure, community infrastructure and cultural resources.

- c. An analysis based on these maps and overlays of how collective natural and community resources would be affected by the entirety of the full gas well build out, including the impact of increased water withdrawals, waste water disposal, habitat fragmentation, increased truck traffic, accidental spills or releases, air emissions, noise and secondary growth.
7. The focus of our study calls for an analysis of land use that would necessitate the use of Geographic Information Systems (GIS). We envision that this sophisticated digital technology will:
 - a. Through full build out modeling create thresholds of activity and help the DEC establish limits to resource depletion and identify areas of conflict.
 - b. Create region wide planning and phased approaches that can concentrate impacts, avoid sensitive areas, or illustrate a need for absolute prohibition of development.
 - c. Provide an ongoing interactive tool for the DEC to manage changes in the landscape and fine-tune unanticipated problems, long after this SEQRA process has concluded.

Chemical exposures and Public Health

1. The dSGEIS (page 5-61) lists the basic health effects of specific chemical compounds associated with hydraulic fracturing but makes the qualified statement that *“more specific assessment of health risks associated with a contamination event would entail an analysis based on the specific additives being used and site-specific information about exposure pathways and environmental contamination levels.”* The suggestion that the DEC intends to do human health risks assessments after a contamination event is insufficient. The DEC and the NYDOH must conduct a public health risk assessment within the legally required cumulative impact assessment process and should use predictive modeling to determine the number of illnesses and deaths to be anticipated from the use of each individual fracking chemical. Considering the many chemicals that are added to fresh water to create fracturing fluid, it would be important for the DEC to review Dr. Theo Colborn’s reports on hydraulic fracturing at The Endocrine Disruption Exchange at www.endocrinedisruption.com. The dSGEIS has relied upon many industry studies to support its policies and consideration of Dr. Colborn’s work should be obligatory.⁷
2. The Bibliography for “Human Health Risk Evaluation for Hydraulic Fracturing Additives” in the SGEIS demonstrates that not one medical journal or study was referenced to inform the opinion that public health risk assessments are unnecessary. Instead the bibliography consists of a short list of industry journal articles and fact sheets that focus on the apparent geological impossibility of exposure pathways. The

⁷ Colborn, Theo, Carol Kwiatkowski, Kim Schultz, and Mary Bachran. “Natural Gas Operations from a Public Health Perspective.” *International Journal of Human and Ecological Risk Assessment*. October (2011): 1039-1056. Print.

next draft of the SGEIS should demonstrate that the DEC has considered all opinions on public health and fracking.⁸

3. The SGEIS does not take into account the impacts of hydrofracking on pediatric health. Children are much more vulnerable to toxic exposure pathways – whether it is through excessive noise, vibration, air pollution, or water contamination. The DEC must demonstrate to the public that the most vulnerable members of society have been considered when the Department makes the pronouncement that they do not expect any negative public health impacts.
4. 5–79 of the SGEIS details the handling of hazardous material on the well pad, including manifests and hazardous material data sheets, yet there is no discussion of how these materials suddenly became “un” hazardous once they are pumped into the ground and return as liquid waste. Current regulation declares that drilling wastes can never be considered hazardous.
 - a. *§371.1(e) Exclusions (2) Solid wastes which are not hazardous wastes (v) drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy;*

The DEC has the power under this regulatory review to change hazardous waste designation for drilling refuse and devise a policy that responsibly handles and treats waste that is inherently dangerous. We call upon the DEC to do so.

5. Health risk assessments should be additionally conducted for other toxic exposure pathways - like air emissions or contact with radioactive cuttings or equipment.⁹
6. The dSGEIS does not adequately address the exposure risks involving drilling equipment that has become radioactive itself through persistent contact with radium rich strata over the course of developing multiple wells.
7. The Division of Mineral Resources spills database should be consolidated with the DEC’s online Spill Incidents Report so that the public can keep better track of local contamination sites relating to oil and gas operations. Currently, the DMR database is not immediately accessible to the general public.
8. The SGEIS must mandate absolute prohibitions of hazardous components in fracking fluids, especially endocrine disrupters that pose an unacceptable risk to human health.¹⁰ The DEC must mandate chemical disclosure of all fracking chemicals and drilling muds, and have that information readily available to the public, first

⁸ The Endocrine Disruption Exchange. “Summary of Potential Health Effects of Products and Chemicals Used during Natural Gas Operations.” Accessed online January 3, 2012 at <http://www.endocrinedisruption.com/chemicals.multistate.php>.

⁹ Bishop, Ronald, Ph.D. “Chemical and Biological Risk Assessment for Natural Gas Extraction in New York.”

¹⁰

Steingraber, Sandra. “The Potential Health Impacts of Hydraulic Fracturing: Testimony before the New York State Assembly Standing Committees on Environmental Conservation and Health.” Testimony Presented May 26, 2011.

responders, and medical professionals. This must be made absolutely clear in the SGEIS.

Environmental Justice

1. Commissioner Policy CP-29 requires that the DEC consider environmental justice issues in the dSGEIS. In 2009, the DEC's sole response to this obligation was: everyone has equal access to the dSGEIS process and has the same ability to comment - therefore there are no environmental justice considerations. This was a false interpretation of the policy. In the 2011 rdSGEIS, The DEC spent considerable effort describing the demographics of the Marcellus Shale region, provided maps of minority or low-income communities and gave generic descriptions of the laws designed to address environmental justice. But in addressing specific mitigative action to be taken in the context of HVHHF the SGEIS only offers that:

“A Department permit applicant must conduct a preliminary screen to identify whether the proposed action is located in a potential EJ area. The applicant also must identify potential adverse environmental impacts with the area to be affected.”(2-105)

2. Clearly, what is being prescribed by the DEC is a toothless exercise that provides no remedy to minorities or the economically disadvantaged, save that they are identified as being in the pathway of sprawling industrial development. The next draft of the SGEIS needs to certify that **Melvin Norris, Director NYSDEC Office of Environmental Justice** has signed off on the EJ section and the subsequent mitigations in regulation.
3. Natural gas development polarizes communities, creating discord between the few wealthy leaseholders and those that must live with the environmental fallout. It would also appear that large public water systems will gain additional protections while rural landowners will face greater development pressure with fewer protections to their own private water systems. The DEC must go back and identify how socio-economic status interfaces with Marcellus shale development and devise **real** strategies to alleviate these impacts on the disadvantaged and disenfranchised members of the community.

Pipelines and Compressor Stations

Natural gas development cannot happen without the construction of supporting delivery and pressurization infrastructure that in some cases has worse long term air emissions than the gas wells they service. The DEC continues to argue that because pipelines and compressor stations fall under the jurisdiction of the Public Service Commission they are not responsible for considering the environmental impact of this infrastructure – even if it is an essential component to natural gas development. The Sierra Club continues to maintain that the DEC is confusing its obligations under SEQRA and that the Division of Mineral Resources has the responsibility to look at all direct and indirect environmental impacts stemming from an action, regardless of who has the ultimate permitting authority. **To separate pipelines and compressor stations from the study constitutes**

unlawful segmentation and denies the public critical information on impacts. The vast grid work transmission lines, pipelines and compressor stations will directly contribute to air quality issues through leakage, despoil rural character, lead to habitat fragmentation, and become conduits for invasive species.

Green House Gas Emissions

1. It is inappropriate to conduct an assessment of Green House Gas (GHG) emissions for only an individual well pad without considering the cumulative impacts of developing the entire Marcellus shale gas field. The over-arching threat of global climate change is a function of cumulative effects, and the DEC must make a broad based assessment so that we can understand its full effect, mitigate impact and contemplate alternative actions.
2. Table GHG-1 appears not to account for methane emissions during the drilling process. Released methane from non-target formations, described as a gas “kick”, can sometimes be significant and should be accounted for in the tabulation of GHG emissions. In general, it would appear that the dSGEIS undercounts the amount of methane released during the well development process.
3. The dSGEIS loosely refers to natural gas as an important transitional fuel without providing empirical justification for the statement. A full life cycle analysis of natural gas production should be conducted to justify such a claim, especially in consideration of fugitive methane as a powerful green house gas. This analysis should include the anticipated timing of when this transitional gas will become available. Key to the transition argument is the development of the renewable energy economy. This goal is in direct competition with a glut of cheap natural gas.
4. The green house gas mitigation proposal suggested in the dSGEIS is entirely voluntary and offers no other provisions than participation in the Gas STAR Program. This participation should be mandatory. In addition the SGEIS must give clear mandates for emissions reductions based upon cumulative modeling, and devise clear strategies and thresholds that must be met.
5. Why does the SGEIS use the 100 year Global Warming Potential number (25X the potency of CO₂) in its consideration of climate change impact and mitigation when the 20 year GWP# (72X the potency of CO₂) is provided, but seems to go unexamined? Sierra Club believes the DEC should also consider the 8 year GWP as the urgency of curbing greenhouse gases is immediate.¹¹
6. Table 6.28 (page 6-202) appears to present wildly inaccurate numbers. Does the DEC really believe that a vertical well produces more CO₂ emissions (14,810 tons) than a horizontal well (14,761 tons) in spite of the vastly disproportionate energy inputs? How is it that a 4 well pad produces less than twice the CO₂ emissions of a single horizontal well? If these concluding numbers are the

¹¹ Howarth, Robert W., Renee Santoro and Anthony Ingraffea. “Methane and the Greenhouse-gas Footprint of Natural Gas from Shale Formations.” *Climate Change Letters*. 106.1, April (2011). Print.

culmination of the SGEIS's green house gas emission estimates – then the entire analysis is invalid.

7. Part of the DEC's obligation in managing Mineral Resources is to minimize waste. The DEC should expand this mandate to accommodate climate change considerations.¹² Nowhere in the SGEIS is there an analysis of the thermodynamics of HVVHF – where there is a comparison of energy inputs (diesel and gasoline for trucks, drill rigs, compressors, pumps) –vs- energy outputs (CH₄). The DEC should provide estimates of how many BTUs of Diesel and gasoline are consumed in the extraction of natural gas –vs- how many BTU's of methane are produced on average per well.

Local Government and Public Participation

1. Energy companies have secured the mineral rights to millions of acres of private land from the Catskills to Lake Erie, and will start drilling high volume horizontally hydrofracked wells as soon as the Department of Environmental Conservation completes the SGEIS. Municipalities within this zone of development are scrambling to prepare for the fallout of natural gas development - thousands of truck trips, massive local water withdrawals, new pipelines, harmful air emissions and potential accidents ranging from well fires to chemical spills. The economic burden on host communities saddled with gas fields can be tremendous – from accelerated road maintenance to increased demand on public services, housing and emergency response. But to date, the New York State Department of Environmental Conservation and energy development companies have told local governments that NY's Environmental Conservation Law supersedes all local ordinance and they have little control over the process and the costs incurred to the community by this new wave of drilling. Under this interpretation an oil or gas well can be sited anywhere without local oversight, regardless of how incompatible it is with established zoning - so long as the well is in compliance with state established setbacks and spacing requirements. Currently, it is perceived that NY communities in drilling districts cannot enforce zoning, noise ordinances, moratoriums or other planning measures deemed necessary to protect unique local assets. **In the most profound sense the burden of oil and gas development is an unfunded mandate to New York's upstate communities if they are not allowed to use the most basic land use planning tools like zoning and ordinance power to protect their economic assets.**
2. In spite of initial promises to find ways to engage local governments in decision-making, the dSGEIS provides little improvement in how municipalities interact with land use in the context of natural gas development. The SGEIS requires drillers to certify that their applications are in compliance with local laws. If land use disputes cannot be worked out between the driller and the municipality then the DEC vows to issue the permit and let the courts sort it out.
3. The SGEIS need to acknowledge that this was not always the position of the

¹² Hughes, David J. "Lifecycle Greenhouse Gas Emissions from Shale Gas Compared to Coal: An Analysis of Two Conflicting Studies." *Post Carbon Institute*. July (2011).

Department. In 1991 Division of Mineral Resources Director, Gregory Sovas, wrote that “DEC has consistently advocated a strengthened and enhanced role for local governments in the review and control of mining operations that can have significant, localized environmental impact, particularly with regard to dust, noise, and traffic.”

[Gregory H. Sovas, “New Mined Land Amendments Provide Opportunities for Local Governments.” Talk of the Towns, Fall, 1991, pages 16 and 21.]

4. A DEC Administrative Law judge wrote this in a June 16, 1997 ruling on *Amenia Sand & Gravel, Inc.*: "Impacts on real property values is not a matter to be adjudicated at a DEC hearing. Local governments, through their ability to regulate land uses by zoning, are the proper agencies to deal with impacts to real estate values and consequent impacts to a community's tax base...As a matter of home rule, it is the Town's prerogative and responsibility to ensure compliance with its own laws. It would be inappropriate for the State Department of Environmental Conservation to attempt to usurp such powers from the Town. Even in instances where the DEC approves projects, such approvals are only indications that the proposals meet the requisite State standards to receive a permit. All DEC permits are conditioned on the basis that an applicant must comply with any and all other applicable laws and regulations, and that a DEC approval does not absolve an applicant from making proper application and receiving whatever other approvals are applicable, whether at the federal or local government levels."
[<http://www.dec.ny.gov/hearings/10963.html>]
5. Thomas Jorling, former head of DEC stated that “The MLRL supersedes all other state and local laws related to the mining industry operations, except general local zoning ordinances. Acceptance or rejection of quarrying as a land use activity is a local function. DEC has no such zoning authority.” [New York State Department of Environmental Conservation Commissioner’s Determination of Lead Agency Under Article 8 of the Environmental Conservation Law, Proposed Sand and Gravel Mine, Parsons Road, Town of Barker, Broome County, by Fahs-Rolston Paving, Thomas C. Jorling Commissioner, March 22, 1990, page 2.] Sierra Club believes this interpretation extends to all mineral resource activity.
6. **The DEC has the power, through regulation, to reaffirm that New York is a home rule state and that municipalities can enforce their ordinance and zoning powers in the context of oil and gas development.**
7. To compound the problems facing municipalities, the dSGEIS suggests that local health departments are responsible for monitoring baseline and ongoing water tests and will handle issues of contamination. Taxpayer funded municipal wastewater treatment plants will bare the costs of pre-treatment upgrades to accommodate the needs of drilling companies. Towns and villages will be responsible for road development and maintenance.
8. **DEC should not issue any permits until it gets a formal response stating that the municipality considers a drilling application acceptable under existing planning**

and zoning.

Well Plugging

1. Currently, the DEC estimates that there are 45,000 abandoned unmapped wells in NYS, most of which are unplugged.¹³
2. The DEC must establish a protocol in the dSGEIS to identify orphaned wells in each individual permit application so that unanticipated communication between an abandoned unplugged well and a horizontal hydraulic fracturing operation will not lead to groundwater contamination or other avoidable accidents.
3. The DEC must hold drillers liable for any accident stemming from an unidentified orphan well impacted by hydro-fracking to ensure that pre drilling investigations are thorough.
4. The DEC must require a drilling company to secure every unplugged well within its spacing unit before drilling can commence. In addition, each new well must provide enough bonding upfront to cover the eventual plugging costs.

Alternative Actions/ No Action Alternative

1. Through an analysis of alternatives the SGEIS must thoroughly address energy conservation and efficiency, the use of alternative sources of energy, especially the use of renewable sources of energy, and combinations of alternatives in the no-action alternative. The dSGEIS dismissed this obligation.
2. Sierra Club Atlantic Chapter strongly suggests that the DEC consider the no action alternative as stated in the Draft Scope “the prohibition of development of Marcellus Shale and other low permeability reservoirs by horizontal drilling and high-volume hydraulic fracturing”. Out of concern for environmental health and global climate change, Marcellus Shale should not be developed until it has been demonstrated that all other alternative and “greener” options for energy production have been exhausted.
3. Sierra Club Atlantic Chapter finds that the analysis of alternative sources of energy in the 1992 GEIS failed to provide a “hard-look” and to fully and accurately assess New York State's ability to generate its energy from renewable sources of energy such as wind, solar, and biomass, the impact on the environment of generating electricity from renewable sources, the impact of energy efficiency and conservation, or the impact of a combination of alternatives as compared with natural gas and oil. The dSGEIS cannot rely on this lack of analysis as fulfilling its obligation to assess alternatives under SEQRA. The DEC must conduct a thorough analysis of the current state of renewable energy use as an alternative to natural gas and the comparative

¹³ Bishop, Ronald, Ph.D. “History of Oil and Gas Well Abandonment in New York.”

environmental impacts associated with each.

Socioeconomic Impacts

1. The Economic Assessment Report (EAR) prepared by Ecology and Environment, inc. for the SGEIS portrays, with little nuance, gas development as a job-creating juggernaut. The study, that cost the DEC one thousand dollars a page – failed to acknowledge the basic economic concerns of the boom and bust cycles of extractive industries, losses to competing industries like tourism or agriculture, the lending crisis associated with gas leased properties, or the externalized costs born on communities from gas development. In mid December 2011, Commissioner Martens acknowledged this failure of the SGEIS and asked E+E to go back and look at the external costs shouldered by communities confronted with gas development. Because this analysis is central to how the DEC should pursue regulations, assess mitigation, or even determine if HVHFF should advance at all in New York, the public has the right to read and comment on this new report. We believe the findings of this yet to be written report have the potential to change mitigation considerations throughout the SGEIS. The DEC should commit to issuing yet another draft of the SGEIS for public comment and review, complete with informed revisions from this report, before there is any move to finalize the document and move forward with fracking.
2. EAR 4-2 The captions and titles represented in Table 4-1, Figure 4-1, and Figure 4-2 refer alternatively to “wells constructed”, “wells developed”, “wells completed”, and “wells drilled”. Is the Dept. describing an identical concept in four separate ways or are these distinctly different terms?
3. Did the EAR consider the limiting constraints of fracking wastewater disposal in their projections of annual well development over the next 30 years? If the DEC anticipates the development of 1500 wells a year it certainly must have a plan for where to dispose of the billions of gallons of waste water that will be the byproduct of that drilling. In consideration of New York’s lack of capacity to treat these wastes, Pennsylvania’s over-saturation in their own fracking wastes, and Ohio’s current moratorium on underground disposal due to induced earthquakes – an immediate solution does not appear to be on the horizon. The SGEIS makes it clear that if a driller has no plan for waste disposal it will not get a permit. The bottle neck of development created by a paucity of waste disposal options should dramatically undermine the Departments estimates of gas production, revenue and job creation. This lack of consideration invalidates the findings of the study.
4. EAR 3-2 – “...the economies of large portions of western and central New York are based on agriculture.” The Report and the DSGEIS should explicitly project possible environmental, social and economic impacts of all aspects of hydrofracking and transport of gas on agricultural lands and agriculture production. The Report does not specify the dollar amount of agricultural production in the shale gas areas or anticipated changes to that amount during shale development.
5. EAR 3-5 – The SGEIS needs to more clearly outline how State certified agricultural districts will be protected from the impacts of natural gas development? If 23 % of

the surface area in the State is farm land – how much of that land overlays potential drilling areas? What percentage of that land is engaged in organic agriculture? What is the loss of revenue projected for these farms if there is a loss of organic certification in the wake of natural gas development?

6. 3-6 – 3-7 The EAR estimates “the impact of a \$1 million increase in demand in the final output of the oil and gas industry on the value of the output of other industries” is \$217,400. This figure appears to be lower than other types of businesses that stimulate “the multiplier effect”. Table 3-8 lists value of output from various business entities but it does not explore the value of lost opportunity costs to businesses or competing land uses like wineries or tourism.
7. 4-61 the report assumes that 90 % of the skilled workers would be NYS residents. This does not reflect the experience in Pennsylvania where many of the workers are transient (TX,OK,AK)
8. The Sierra Club Atlantic Chapter enthusiastically supports the comments sent by economists Janette Barth, Edward Kokkelenberg, Timothy Mount, to Commissioner Martens in mid December outlining the deficiencies of the SGEISs economic projections and considerations. We ask that the findings and concerns in their letter become the basis for the newly commissioned study on socioeconomic impacts of HVHFF.

Comments on High Volume Hydraulic Fracturing Proposed Regulations 6 NYCRR Parts 52, 190, 550-556, 560, and 750

1) **Sierra Club Atlantic Chapter objects to initiating the rule making before the SEQRA process had concluded.** The intent of the State Administrative Procedures Act (SAPA) is for the DEC to craft rules based upon the findings of any supporting environmental impact statement. To devise regulations without a comprehensive analysis is improper. In this case – with outstanding obligations to conduct public health risk assessments, cumulative impact modeling, or comprehensive waste water disposal plans – there is no way that the draft regulations can be representative of the best science-based safeguards. To make this cart-before-the-horse approach worse, the DEC combined the public comment period and hearings for both the SAPA and SEQRA processes. While the Cuomo administration may have seen this as a noble cost saving measure that cuts through unnecessary red tape, the Sierra Club views “the double dipping on hearings” as a subversion of the process, like holding the trial and the sentencing hearing at the same time. The sad undertone from this lapse in procedure is that the State has already decided to move forward on fracking- and that nothing said in these public hearings was going to make any difference.

2) **The Sierra Club Atlantic Chapter objects to the issuance of drilling permits before rulemaking has been finalized.** Perhaps worse than the proposal to commingle the two processes is the DEC’s intention to start permitting drilling applications before the new regulations are even completed. Commissioner Joseph Martens has publicly stated that he will be able to enforce the provisions of the SGEIS, even if they are not rooted in completed regulation. Even if we were to accept this as true, it still provides little comfort in the practical application of permitting. The DEC can choose to enforce - but they can also choose to negotiate or bend the rules and it is the public that will have little recourse without formal regulations on the books to sue the DEC for noncompliance. It is we the public that cannot enforce the non-binding SEQRA permit conditions. The first two years of permitting will be pandemonium. The new required fuels, equipment, setbacks, and procedures will inevitably be difficult to comply with. There will be messy conflicts on the well pad that will push inspectors and drillers to the edge. Without regulations on the books, mitigation standards will be relaxed or ignored and there will be unnecessary degradation - with no legal remedy for the public.

3) **The Sierra Club Atlantic Chapter objects to the selective application of the new regulatory changes.** The new proposed regulations will only pertain to gas wells that consume 300,000 gallons of water or more during the hydrofracking process. Gas wells that consume less than this threshold will only be subject to the permitting conditions established by the 1992 GEIS and regulations, which were last updated in 1972. Since the de facto moratorium was put in place July 2008, the department has issued nearly 1000 permits to drill for oil or gas in New York State. Most of these applications were vertical wells that did not exceed the water use threshold of 80,000 gallons. The 80,000-gallon figure came from the maximum amount of water anticipated for a hydraulic fractured operation in the original 1992 GEIS. The 2011 SGEIS identifies 300,000 gallons as the minimum amount of water required for HVHFF and the starting point for new

regulations. There is a significant gap between the two thresholds with no analysis of the environmental impacts of natural gas wells that use between 80,000 gallons and 300,000 thousand gallons of water. (the September 2009 and July 2011 drafts of the SGEIS suggested that additional SEQRA review would be required for any application that fell between the water requirements of these two thresholds but the subsequent September 2011 draft dropped the subject entirely.)

4) By creating the apparently arbitrary 300,000 threshold, the DEC is more than tripling the water requirements considered by the 1992 GEIS, without any justification, and creating a two-track system of regulatory controls where there is a chasm between protections. The rdSGEIS estimates that 10 percent of the gas wells developed in the future will be horizontal wells, many of which will use less than 300,000 gallons per frack, suggesting that thousands of applications in the coming years will be allowed to use open waste pits, undisclosed fracking chemicals, and be free of new emissions standards, set back requirements, and other improved environmental protections required of HVVHF wells. The intent of the 1992 GEIS was to create the framework for new regulations to govern oil, gas and salt solution mining in the State of New York, but that rulemaking process never took place. It would be entirely inappropriate now for the DEC to move forward with creating regulations for supplemental conditions to the 1992 GEIS without first addressing the need for foundational regulations on which to base the supplement. **The DEC needs to create one unified regulatory standard for all oil and gas development.** The current regulations create a double standard that will inevitably lead to abuse and unanticipated environmental degradation.

5) 3–18 The July 2011 draft SGEIS supported the notion that the DMR should not be regulating oil and gas with outdated permitting conditions:

“the 1992 GEIS included proposed regulations, designed to incorporate many of the permit conditions already in use by the Department’s Division of Mineral Resources when the GEIS was developed. Draft regulations were included in the 1992 GEIS as a means to facilitate public review, and it was then recognized that the GEIS was not intended to serve as a substitute for all of the detailed analysis required by the State Administrative Procedures Act (SAPA) for agency rulemaking. In connection with the Department’s issuance of the dSGEIS, questions have arisen again concerning the need for new regulations and new regulatory initiatives”

This section of the draft was expunged in the September 2011 version probably because it agrees with our position. SEQRA determinations were never meant to serve as a regulatory program. **The DEC has the obligation to go back and fold all oil, gas and salt solution mining into one comprehensive regulatory program.**

6) The draft drilling regulations define HVVHF as “the stimulation of a well using 300,00 gallons or more of water as the primary carrier fluid in the Hydraulic fracturing fluid.” (§560.2(b)(8)) The draft SPDES regulations define HVVHF as “hydraulic fracturing using greater than 300,000 gallons of water cumulatively in the HVVHF Phase.” (Emphasis added) (§750-3.2 (b)(22)) By excluding the word “cumulatively” and

providing no other clear language describing what constitutes HVHF, the DEC creates ambiguity as to what types of activities will be applicable to the new drilling regulations. Without the conditional “cumulative” wording the definition could pertain to each separate frack stage (which may each be under the 300,000 gallon threshold) thus not capturing the application in the HVHFF regulations. The DEC needs to use the same definition for both sections of regulation. We suggest §560.2 (b)(8) be amended to adopt the exact wording of (§750-3.2 (b)(22) (23) and (24) of the SPDES portion of the draft drilling regulations for HVHFF.

7) The regulatory impact statement fails to include an acceptable cost assessment to the State agencies or local governments that have to contend with the substantial financial investment required to oversee what will be an especially large and new regulatory program. This is an unacceptable deficiency that must be elaborated upon and made available to the public for comment before any finalization of the new regulations.

8) §190 (14) (15) and 190.8 of 6NYCRR provides for a ban on all oil and gas activity on the surface of all state land, not just for HVHFF. The Sierra Club encourages the DEC to extend this all-inclusive approach to every application to drill for oil, gas, and salt solution mining. For instance, DEC proposes that oil and gas activity will still be permitted in FAD watersheds, just as long as the activity uses less than 300,000 gallons of water. One of the original justifications for the SGEIS was that the 1992 GEIS never considered the impacts of drilling in major drinking watersheds. The SGEIS and associated new regulations do little to address these impacts and provide only a partial remedy to future development. If the DEC is going to allow low volume oil and gas development in FAD watersheds or other critical drinking watershed across the state – it must provide the proper environmental review and justification. As stated in our SGEIS comments, in many situations vertical well spacing presence greater surface impacts to drinking water than HVHFF. **The new regulations should set one standard for all oil and gas activity.**

9) §560.2 (14)(16) The new regulations continue the DEC’s illogical distinction between principal and primary aquifers, in the context of protecting water quality. Regardless of what population density is served by an aquifer the mechanism of protection should be identical. By suggesting that principle aquifers deserve less protection because they serve a secondary human purpose, condemns future New Yorkers to potentially more resource constraints when potable water supplies may indeed become scarce. The DEC must be forward thinking in all its proposed mitigation.

10) §560.3 (a)(10) The new regulations should not require or provide specifications for open lined reserve pits. The closed loop system described in §560.3 (a)(11) should be mandatory for drilling muds, cuttings and flowback fluids. **There is no aspect of oil and gas development where an open pit cannot be replaced with a closed tank.** The DEC must commit to best management practices at all times.

11) §560.3 (a)(17) The new regulations provide very little substance in protecting biodiversity from oil and gas development. Almost none of the mitigations proposed by

the SCEIS are reflected in the new rules. The requirement of posting best management practices for the identification and control of invasive species at the drill site is not the same as actually requiring that the driller comply with those practices.

12) §560.3 (c)(2) The DEC should outline the rules for how it will determine exemptions from the required chemical disclosure requirements for fracking additives. **We strongly advocate that all chemicals used in fracking and the individual chemical contents of the resulting flow back be made available to the public – not just regulators.**

13) §560.4 (a)(1) The DEC should not allow any private land owner to waive the 500 ft, buffer between a drinking water source and the gas well pad. The intent of the regulation should be to protect water resources in perpetuity not the current interests of a transient property owner. The DEC should also establish a non-negotiable set back from residential structures of at least 500 ft. The SCEIS requires separate SEQRA determinations for any application that proposes to drill within any protective buffer zone. Again, we believe there should be no variances to any established set back, but the regulations should clearly state that any proposal do so shall automatically be a Type I action under SEQRA.

14) §560.4 The new regulations should include the SCEISs proposed 150ft well pad set back from a perennial or intermittent stream, storm drain, lake or pond –along with all other proposed setbacks. It appears irrational not to also provide wetlands with a 150ft. buffer instead of relying on the existing 100ft. Does the DEC really regard our most sensitive aquatic ecosystems less deserving of protection than a storm drain? Ultimately, the Sierra Club feels that setbacks from all surface waters should be consistent with the protections given drinking water wells -500ft- and that 150ft is not nearly protective enough.

15) §560.4 (a)(3) the currently mapped 100 year flood plains are no longer sufficient indicators of persistent flood risk areas. In consideration of climate change and the significant increase in catastrophic flood events, the new regulations should prohibit development at the 500-year flood stage, unless a recalibrated and remapped regional approach is taken that properly identifies the new parameters of a true 100-year storm event.

16) §560.4(c) Reporting of “non-incidents” should be posted in the DEC’s online Spill Incidents Reports. The new regulations should have all hazardous spills and releases from oil and gas activities open and transparent to the public. The current, and irrationally separate, oil and gas spills database is difficult for the public to access and shields

17) §560.5 (d) The new regulations should specify and define the necessity of third party and independent baseline testing of water resources. Independent testing companies must not be allowed to serve the driller in other capacities – like preparation of permit applications or representing the driller in public.

18) §560.5 (f) The new regulations should require a mandatory monthly online filing of Drilling and Production Waste Tracking Form so that the public can observe the effectiveness of fracking waste disposal through the FOIL process or even find it on the internet. The current proposal would have waste haulers self monitor and have information available upon the DEC's request. If the DEC chooses not to request records from haulers, the public has no redress under the Freedom of Information Act to stay informed. Ultimately, it will be to the DEC's benefit to systematically track and record the movements of drilling waste so that it can analyze trends, identify problems, and effectively provide alternatives. Monthly filing of the DPWT form must be mandatory through regulation.

19) §560.6(a)(ii) The new regulations establish an open pit volume limit of 250,000 gallons for drill cuttings/fluids or 500,000 gallons for multiple pits on one site. 5-34 of the SGEIS estimates that a 7,000 foot well bore combined with a 4,000 foot lateral will produce 217 Cubic yards of cuttings or 44,000 gallons. This appears to be at the upper limit of what is to be expected for a single well. If the Department anticipates that this 200,000 gallon overcapacity is to serve multiple wells on one pad – then it is facilitating the long term and unsafe presence of open pits on the well pad. Since the new regulations will only allow 45 days of waste storage in the pits, this overcapacity seems unwarranted – unless the DEC intends to allow consistent variances to drillers that exceed the anticipated waste fluid amounts. Section 5.2.3 of the SGEIS details the tanks and recirculation apparatus for drilling muds that suggests all liquids are recycled into the drilling process and cuttings are separated – so there shouldn't be that much liquid waste in the reserve pits; certainly not enough to require a 200-500,000 gallon impoundment. In general, this section of the new regulations goes into great detail about the specifications of an antiquated technology (open pits) that should be discontinued in favor of close loop systems and sealed tanks. It seems especially inappropriate considering that the Department provides very little specificity when handling regulatory mitigations for loss of biodiversity, air quality degradation, or public health issues. Once and for all the DEC should reject open pits as a best available technology in favor of closed loop systems.

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