



January 11, 2012

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

Re: Comments on the Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program

Dear Sir or Madam:

The Natural Resources Defense Council, Inc. (“NRDC”) is a national, non-profit legal and scientific organization that has been active on a wide range of environmental issues since its founding in New York in 1970. Although NRDC has grown into an international organization with six main offices and a staff of over 400, we have retained a team of lawyers, scientists and other specialists devoted exclusively to safeguarding New York’s environment and to improving the quality of life for the state’s residents. NRDC today has more than 550,000 members, including close to 40,000 in New York State alone. Over the past 42 years, NRDC has engaged in numerous activities to safeguard New York’s water, air and landscapes and has reviewed and commented on innumerable environmental impact statements of importance to New Yorkers.

INTRODUCTION

We appreciate the opportunity to submit these comments to the New York State Department of Environmental Conservation (“DEC” or “the Department”) regarding the Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing [“HVHF”] to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs, dated September 7, 2011 (“RDSGEIS” or “the state’s HVHF drilling proposal”). In addition to this comment letter, NRDC’s submission includes:

- (1) a separate Joint Legal Memorandum submitted today under separate cover by NRDC, together with Catskill Mountainkeeper, Delaware Riverkeeper Network, Earthjustice, Riverkeeper and the Sierra Club (“Joint Memorandum”);

- (2) technical and scientific comments submitted under separate cover today by the Louis Berger Group on behalf of all but the last of the above organizations (“Technical Comments”)¹; and
- (3) the attached letter written by Sive, Paget & Riesel, P.C. with respect to the appropriate role and authority of local governments in siting and addressing impacts from proposed HVHF drilling (“SPR Letter”).²

We request that these three additional submissions be incorporated by reference into this letter; together, this letter, the Joint Memorandum, the Technical Comments and the SPR Letter constitute NRDC’s submission to DEC.

NRDC and our technical experts have completed our review of the RDSGEIS and have concluded that, despite improvements over the Department’s 2009 environmental impact statement, the RDSGEIS contains numerous deficiencies and gaps, fails to fully satisfy the requirements of the State Environmental Quality Review Act (“SEQRA”) and should be revised and re-proposed for public review as the next step in New York State’s attempt to implement an environmentally protective program for HVHF drilling in the Marcellus and Utica Shales and similar formations.

As is evident from the scope of our submissions, there remain a substantial number of issues that require additional attention. Ten of the most significant concerns prompting our call for a second revised DSGEIS are:

- (1) **The scope of the action is too broad:** The current version of the impact study and proposed regulations purport not only to address HVHF drilling in the Marcellus shale region, but also shale formations such as the much deeper Utica Shale; yet the study only directly looks at the impacts of drilling in the Marcellus. As our experts point out, every shale formation is different, and so are the environmental concerns with developing different regions. Separate shale formations demand their own environmental reviews. Until that happens, drilling in these other formations should be off the table.
- (2) **NYSDEC fails to properly consider cumulative impacts:** NYSDEC falls short of considering cumulative impacts which are reasonably foreseeable in many of the RDSGEIS’ assessments. The RDSGEIS excludes any meaningful analysis of: the cumulative impacts of land disturbance on water quality from multiple well pads; the cumulative impacts of multiple well pads and pipelines with respect to wildlife habitat fragmentation; the cumulative noise and vibration impacts of multiple wells being developed concurrently, as well as transportation-related noise impacts on human health

¹ The Technical Comments include reports by: Harvey Consulting, LLC, Dr. Tom Myers, Dr. Glenn Miller, Dr. Ralph Seiler, Dr. Susan Christopherson, Meliora Environmental Design, Louis Berger Group, Kevin Heatley, Dr. Kim Knowlton, Dr. Gina Solomon, and Briana Mordick.

² The SPR Letter is also endorsed by and subscribed to by Riverkeeper, Inc., which similarly requests that it be considered as part of its submission on the RDSGEIS.

and wildlife; the cumulative impacts of multiple well pads on sensitive visual resources; and the cumulative impacts of well re-fracturing either at one or multiple wells.

- (3) **NYSDEC fails to properly consider reasonable, environmentally preferable alternatives:** In the 1,500-plus page RDSGEIS, the Department limits its discussion of alternatives to a mere ten pages analyzing (inadequately) three alternatives. Given the breadth of this project and its potential effect on the state, an analysis of a wider range of alternatives is needed in order to satisfy the requirements of SEQRA, including a “special places off-limits to drilling” alternative, “demonstration project” alternative, a “deference to local zoning alternative” alternative, an “environmental hazard areas off-limits to drilling” alternative, and a “delayed action” alternative.
- (4) **Many mitigation measures are not included in regulations:** While a number of proposed mitigation measures are outlined in the RDSGEIS, many others are absent or incomplete. In addition, many proposed mitigation measures appear to be intended as rules and therefore require formal promulgation as regulations pursuant to the State Administrative Procedure Act (“SAPA”). (Otherwise, these measures would be subject to change on a case-by-case basis without public review or comment.) While some of these measures are incorporated as proposed rules, others are not.
- (5) **There is no plan for wastewater treatment:** The wastewater generated from HVHF drilling operations is extremely toxic. Yet the RDSGEIS presents absolutely no plan whatsoever for how the vast amounts of toxic wastewater expected from HVHF drilling operations would be managed. Nor does it evaluate the potential impacts of the reasonably foreseeable management options. Given the serious impacts of improper wastewater management that have occurred elsewhere – from contaminated rivers from treatment in municipal sewage plants in Pennsylvania to earthquakes from improper deep well injection in Ohio – these impacts must be analyzed and disclosed, and a plan formulated.
- (6) **NYSDEC is still proposing to classify toxic waste as non-hazardous:** NYSDEC is still proposing that contaminant-laden, potentially radioactive drilling and fracturing fluids, mud-drilled cuttings, pit liners, flowback water and produced brine be classified as *non-hazardous* industrial waste. While NYSDEC proposes a tracking system for solid and liquid wastes generated in connection with HVHF drilling, similar to that which is required for medical waste, this system does not go far enough to protect New Yorkers from serious public health threats associated with inadequately regulated hazardous wastes.
- (7) **NYSDEC failed to evaluate potential impacts to human health:** There is virtually no exploration in the RDSGEIS of the health impacts HVHF drilling could have on New Yorkers. Yet it is increasingly recognized that a full health impact assessment is a critical component of a thorough examination of the potential risks of HVHF drilling. This needs to be addressed before the state moves forward.

- (8) **NYSDEC failed to consider negative socioeconomic impacts:** NYSDEC has acknowledged that it needs to re-do its socioeconomic analysis because of glaring omissions. Most significantly, while overstating potential economic benefits, the report includes only 7 pages out of more than 250 on the potential negative economic impacts, when we know that there are real and substantial economic risks associated with HVHF drilling.
- (9) **Proposed protection of NYC and Syracuse watersheds and infrastructure is inadequate:** The upstate watersheds that supply half the state's population with unfiltered drinking water serve as a national model for watershed protection and sustainable economic development. The 4,000-foot buffer area proposed around these watersheds is not enough to prevent horizontal drilling from actually taking place *under* the watersheds, as horizontal drilling as it is presently practiced can extend well over 6,000 feet in length. Despite extensive technical evidence from the New York City Department of Environmental Protection ("NYCDEP") indicating that a 7-mile buffer zone is required to protect New York City's aging and leaking water supply infrastructure, DEC is *not* proposing to create such a safety zone to shield this infrastructure from new drilling.
- (10) **Proposed protection of special resource areas is inadequate:** All of NYSDEC's "prohibited" areas (e.g., certain state-owned land; primary aquifers; and other public drinking water supplies) apply only to surface disturbance (thereby allowing subsurface HVHF drilling activity), and some "prohibitions" include "reconsideration" provisions that would allow the state to consider permitting drilling in buffer zones within 2-3 years of measuring "actual experience and impacts associated with permit issuance." This sounds dangerously like an open door to cut back on buffer areas that are, in theory, based on the best available scientific evidence.

To be sure, there are significant elements of the state's proposal that are measurably improved from the Department's 2009 DSGEIS, and it is evident that substantial effort has gone into the RDSGEIS.³ Nevertheless, the numerous gaps and shortcomings identified by our experts, and set forth in detail in the Technical Comments, have convinced us that the RDSGEIS is still not in compliance with SEQRA mandates.

The state's HVHF drilling proposal has raised some of the most significant issues for New York State's environment in recent memory. Under these circumstances, it is especially important that DEC take the additional time that is needed to assure that all necessary information has been gathered, all reasonable questions have been answered, all sensible alternatives explored and all practical measures to minimize adverse environmental impacts have been adopted. To accomplish these next steps requires that DEC, following its review of these and other public comments, respond fully to the numerous questions posed and issues raised and re-issue a new revised draft supplemental environmental statement.

³ The Technical Comments specifically identify improvements over the 2009 DSGEIS.

In the remainder of this letter we set forth in more detail several of NRDC's major concerns about specific aspects of the RDSGEIS. In Section I, we identify major gaps in the RDSEIS analysis of alternatives. In Section II, we describe significant gaps in the RDSGEIS commitments to mitigate adverse environmental impacts. Finally, in Section III, we highlight specific remaining concerns about the weaknesses in proposed protections for the unfiltered New York City and Syracuse watersheds, which provide drinking water to more than 9 million New Yorkers.

We thank DEC for extending the comment period on its RDSGEIS from December 12, 2011 to January 11, 2012. This extension was helpful in allowing NRDC and many other members of the public to review the voluminous scientific and technical proposal in more detail and to comment more meaningfully on this lengthy and enormously important DEC environmental analysis.

I. THE RDSGEIS FAILS TO FULLY CONSIDER ALTERNATIVES, AS REQUIRED BY LAW

It is a cornerstone requirement of SEQRA that every environmental impact statement discuss "alternatives to the proposed action."⁴ DEC regulations implement this directive. They specify that an environmental impact statement ("EIS") must include "a description and evaluation of the range of reasonable alternatives" to the proposed action.⁵ Such an analysis is fundamental to SEQRA's substantive requirement that agencies "shall act and choose alternatives which, consistent with social, economic and other essential considerations . . . minimize or avoid adverse environmental effects . . ."⁶

The statute and regulations do not require that every conceivable reasonable alternative be analyzed as part of the EIS process. But the regulations stress that the EIS must examine "the range of reasonable alternatives to the action which are feasible . . ."⁷ And as Gerrard, Ruzow and Weinberg note in their respected SEQRA treatise, "[t]he range of alternatives to be considered in a generic EIS is generally broader than in a site-specific EIS . . ."⁸

The RDSGEIS chapter on alternatives for the state's proposed hydraulic fracturing proposal, however, falls short of these standards. The entire alternatives discussion is set forth in ten pages. Within those pages, a "No-Action Alternative" a "Phased Permitting Approach" and a "Green' or Non-Chemical Fracturing Technologies and Additives" are perfunctorily described and summarily dismissed.⁹ But the state's HVHF drilling proposal -- which envisions as many

⁴ Environmental Conservation Law ("ECL") § 8-0109.2(d).

⁵ 6 N.Y.C.R.R. § 617.14(f)(5).

⁶ ECL § 8-0109(1).

⁷ 6 N.Y.C.R.R. § 617.9(b)(5)(v).

⁸ Environmental Impact Review in New York, Section 5.14[2][a] (Matthew Bender).

⁹ DSGEIS, Chapter 9.

as 1,484 or even 2,216 horizontal wells developed annually -- could result in wide-ranging and long-lasting adverse impacts within as many as thirty counties in New York State. Under these circumstances, the document's alternative analysis fails to provide a sufficient level of detail or provide decision-makers with the information they need to rationally satisfy SEQRA's substantive requirement.

In the remainder of this section, we set forth five reasonable alternatives that can and should be fully evaluated as part of the state's SEQRA analysis:

1) The "Special Places Off-Limits to Drilling" Alternative

One reasonable alternative that the RDSGEIS failed to examine is an alternative that sets aside environmentally sensitive areas within the state's portion of the Marcellus and Utica Shales off-limits to drilling and drilling-related activities. This alternative would identify areas of exceptional ecological, hydrological, recreational or historic significance within the Marcellus/Utica region and propose to prohibit drilling and drilling-associated environmental disruptions within these specially protected areas. Such an approach would be comparable to gas and oil extraction policies in other jurisdictions. For example, the federal government has long prohibited gas and oil exploration on certain federal lands and offshore water areas due to the environmental sensitivity of those areas. And the state of Ohio's gas drilling regulations, despite glaring weaknesses on other matters, also prohibit oil and gas exploration, development and production on nature preserve lands.¹⁰

A "Special Places" alternative is not discussed in the alternatives chapter of the RDSGEIS. DEC has suggested that such an alternative is unnecessary because DEC is intending to generally or partially prohibit drilling in several locations, such as the New York City and Syracuse unfiltered watersheds. (The RDSGEIS also speaks favorably of, but does not commit to, the idea of prohibiting drilling in areas where endangered or threatened species are known to occur.¹¹) However, such a position fails to resolve our concern for two reasons. First, the state's proposed prohibitions on drilling in the New York City and Syracuse watersheds are not complete (as explained more fully in Section III, below). Moreover, there are other areas within New York State's Marcellus/Utica Shale region that -- because of their special environmental features -- also deserve to be fully and permanently protected from the risks of widespread industrial gas drilling.

Among the environmentally sensitive areas that should be included in an alternative that designates special places as off-limits to drilling are the following:

¹⁰ See "<http://codes.ohio.gov/orc/1509.73>" at 4.

¹¹ See RDSGEIS at 7-98.

--**New York City and Syracuse watersheds** (unfiltered drinking water supplies for millions and facing the risk of multi-billion dollar filtration orders under federal Safe Drinking Water Act in the event of declines in source water quality);

--**Catskill Park** (nationally prominent recreation area, created by state law more than a century ago and referred to as “America’s First Wilderness”);

--**Upper Delaware Scenic and Recreational River and Delaware Water Gap National Recreation Area** (federally designated recreational jewel and source of drinking water for more than 15 million out-of-state users);

--**Primary Water Supply Aquifers** (“highly productive aquifers” that “are presently utilized as sources of water supply by major municipal systems”) and **Principal Water Supply Aquifers** (“highly productive” aquifers that “could become Primary Aquifers depending on future water supply use”) -- both of which, according to DEC, are “particularly susceptible to contamination from surface activity.”¹²;

--**State-Owned Lands and State Parks** (including state forests, wildlife management areas and official parks, all of which are publicly-owned environmental and recreational resources of statewide significance);

--**Finger Lakes watersheds** (nationally known twelve lake region that, as the New York State Department of State has noted, contains “a variety of valuable natural resources including water, fish and wildlife habitat, wetlands and forest. The lakes and their watersheds are used,” the Department of State has proclaimed, “extensively for agriculture, recreation and tourism, highlighting the link between resource protection and the regional economy.”)¹³;

--**Cooperstown and its transportation corridor** (home to the National Baseball Hall of Fame, the Glimmerglass Opera and other museums and comprising a world-famous tourist Mecca); and

--**Critical Habitats for Endangered and Threatened Species** (lands within the Marcellus/Utica that serve as essential living areas for animals and plants that have been specifically designated by federal or state officials as endangered or threatened with extinction).

Please note that the above listing of proposed Special Places Off-Limits to Drilling is not intended to be inclusive.

In sum, DEC, to satisfy SEQRA requirements, should evaluate an alternative that would prohibit HVHF drilling and drilling-related activities in areas of the Marcellus/Utica Shale that have exceptional ecological, hydrological, recreational or historic significance. Such an

¹² See RDSGEIS at 6-36, 37.

¹³ http://nyswaterfronts.com/initiatives_fingerlakes.asp.

alternative is reasonable within the meaning of SEQRA in that it could still allow DEC to advance its programmatic objectives of shale gas development in less sensitive portions of the state. Accordingly, in addition to the other reasonable alternatives outlined below, DEC should include an analysis of a “Special Places Off-Limits” in a revised version of its RDSGEIS.

2) The “Demonstration Project” Alternative¹⁴

A second reasonable alternative that the RDSGEIS fails to analyze is an alternative that envisions implementation of a comprehensive HVHF drilling demonstration project in New York before any final decisions are made to authorize large-scale HVHF drilling operations here. This alternative would help the state to establish whether in fact HVHF drilling could be accomplished in a manner consistent with Governor Andrew Cuomo’s pledge that “if and when the Shale’s natural gas is obtained, it does not come at the expense of human health or have adverse environmental impacts.”

Pursuant to such an alternative, the state would implement a three year demonstration of HVHF drilling in several geographically limited areas. DEC would issue permits for a limited number of wells, say not more than 100 annually in total, and would closely monitor and supervise drilling operations in two or three selected test jurisdictions. Adoption of comprehensive regulatory safeguards would be a prerequisite for such a demonstration and such safeguards would be fully applicable to the pilot projects. In addition, sufficient resources for pre-drilling water quality monitoring, as well as adequate staffing for enforcement and oversight at the state and local level, full bonding assurances to cover possible spills, etc., would also be put in place in advance, so as to maximize protection for the local community, its residents and environmental quality during and after the three-year test. Finally, pursuant to this alternative, DEC would defer a decision on whether to advance further a broader HVHF drilling program in New York State until after the three-year pilot project has been completed and analyzed.

The RDSGEIS does not, however, analyze such a “Demonstration Project” alternative. The closest it gets to considering such an approach is a brief discussion and dismissal of a “phased permitting approach.”¹⁵ The two pages of text here do not examine the need for, or benefits of, a demonstration project to determine whether it is possible to develop a set of regulatory safeguards that could assure that HVHF drilling would advance safely in New York. Instead, the document first claims that the state is partially implementing a phased program since it is proposing some restrictions on drilling, such as in the New York City and Syracuse watersheds. But such restrictions, while welcome (and despite their gaps, discussed in Section III, below), are no substitute for a true demonstration project that would test the protective abilities of a comprehensive regulatory regime before authorizing a potentially much larger, statewide HVHF drilling program.

¹⁴ Please note that the discussion of alternatives involving less intensive development does not presuppose that a legally sufficient revised DSGEIS will provide the basis for any new drilling in the state.

¹⁵ See RDSGEIS at 9-3, 9-4.

The RDSGEIS' discussion of a "phased approach" also asserts that "any such annual limit on permits issued would be arbitrary" without explaining a rationale for its conclusion. And the document's final point -- that formal phasing is not practical "because of the inherent difficulties in predicting gas well development rates and patterns" -- also fails to provide sufficient justification for rejecting a demonstration project alternative. Meanwhile, HVHF drilling-related water and air pollution problems have been documented on multiple occasions.¹⁶

Therefore, to satisfy the SEQRA mandate, DEC should analyze an alternative that would provide the opportunity for a three-year demonstration project -- limited to two or three jurisdictions and with all necessary safeguards -- to assess whether a comprehensive set of new regulatory requirements could fully protect New York's water, air and communities from the multiple risks of HVHF drilling. Such an alternative is reasonable in that it could still allow for additional HVHF drilling operations after three years (and for New York to obtain HVHF drilling's purported economic and energy benefits), provided that the demonstration project itself established that HVHF drilling with the highest level of oversight could in fact be safely advanced in New York State. DEC should include an analysis of a "Demonstration Project" alternative in a revised version of the DSGEIS.

3) The "Deference to Local Zoning" Alternative

A third alternative not considered in the RDSGEIS is an alternative that defers to localities in situations where state HVHF drilling objectives conflict directly with local land use policy.¹⁷ Specifically, such an alternative would provide that DEC in its gas drilling permit process would respect local zoning provisions and comprehensive local land use plans that restrict heavy industrial activities, including HVHF drilling. In addition, this alternative would provide that, even where local zoning and land use plans do not specifically prohibit such heavy industrial activities, affected local communities would be given a clearly delineated advisory role in the Department's permit application process.

The RDSGEIS unfortunately sends ambiguous signals about what the Department will do if HVHF drilling permit requests are made for areas of the Marcellus/Utica Shale where local zoning provisions or land use plans preclude drilling and other heavy industrial activities. DEC proposes, in the RDSGEIS, that applicants merely be required to "compare the proposed well pad location to local land use laws, regulations, plans and policies" to determine whether the proposed drilling is consistent with those laws, regulations, plans and policies. But even where an applicant or a locality would inform DEC that a conflict exists, DEC is proposing only to request additional information so that it can consider whether "significant adverse impacts

¹⁶ See, e.g., ProPublica investigative articles on HVHF drilling at <http://www.propublica.org/series/fracking>."

¹⁷ For a further discussion of issues related to the appropriate role for local governments in HVHF siting determinations, see the SPR Letter.

relating to local land use and zoning would result” from the proposed drilling.¹⁸ This would apparently leave sole decision-making authority in DEC’s hands, even where a proposed drilling permit would directly conflict with a local land use plan or zoning ordinance; the RDSGEIS does not commit the state to prohibiting drilling at such locations, even under such circumstances. (Indeed, the RDSGEIS completely omits from its list of “prohibited locations” areas where local zoning resolutions preclude heavy industrial activity, such as gas drilling.)¹⁹

Such an approach appears to be inconsistent with longstanding legal principles, which have upheld the right of localities, under the police power, to establish comprehensive land use plans and local zoning ordinances.²⁰ Moreover, it is unreasonable from a policy perspective for DEC to undercut local zoning resolutions and land use plans as part of a Marcellus/Utica Shale HVHF drilling program. The state could achieve its overall economic and energy objectives while still respecting local zoning authority and, even in the absence of local zoning prohibitions, providing a defined role for affected localities in the permitting process.

To comply with SEQRA and bedrock legal principles, DEC should include a “Deference to Local Zoning and Land Use Planning” Alternative in a revised DSGEIS. Alternatively, the Department should otherwise modify its RDSGEIS to clarify that local land use plans and zoning resolutions will be honored in the permitting process and that, in all situations, affected localities will be given meaningful input in the permitting of gas drilling operations within their jurisdictions.

4) The “Environmental Hazard Areas Off-Limits to Drilling” Alternative

A fourth reasonable alternative that the RDSGEIS did not fully analyze is an alternative that unambiguously prohibits drilling and drilling-related activities in areas of the Marcellus/Utica Shale where environmental hazards are present. This alternative would identify areas where it would be especially dangerous to undertake HVHF drilling activities, due to pre-existing environmental risks on those lands.

To be sure, elements of such an “Environmental Hazard Areas Off-Limits” alternative are incorporated elsewhere in the current RDSGEIS. For example, the document contains a partial, non-comprehensive commitment that high-volume hydraulic fracturing not be permitted in 100 year floodplains.²¹ But the current document does not propose to prohibit subsurface activities in floodplain areas, nor to prohibit HVHF drilling-related activities such as drilling and pipeline infrastructure, transportation facilities from being located within floodplains. Finally, as DEC acknowledges, floodplain maps in key portions of the Marcellus/Utica region are out-of-date and being updated by FEMA; unprecedented flooding events in recent years suggest that many

¹⁸ RDSGEIS at 1-11.

¹⁹ See RDSGEIS at 3-14; 15.

²⁰ See *Village of Euclid v. Amber Realty*, 272 U.S. 365 (1926).

²¹ RDSGEIS at 7-76.

traditional floodplain designations will have to be expanded. While the RDSGEIS seems to recognize these facts, it does not propose prohibitions on drilling and drilling-related activities in recognized and potential 100 year floodplain areas until all floodplain maps are revised based on the latest meteorological conditions.

The RDSGEIS should set forth an alternative that unambiguously prohibits drilling and drilling-related activities in environmentally hazardous areas. Among the environmentally hazardous areas that should be placed off-limits to drilling and drilling-related activities are the following:

--National and State Superfund and Hazardous Waste Sites (prohibiting HVHF drilling and drilling-related activities on federally regulated waste locations, such as National Priority List Sites and RCRA hazardous waste facilities, and State-designated Superfund and Brownfield properties);

--Floodplains and Special Flood Hazard Areas (prohibiting HVHF drilling and drilling-related activities in all 500 year floodplains, as determined by up-to-date floodplain mapping, with no permits to be issued in potential floodplain areas until all such mapping updates are completed); and

--Locations with Risks from Seismic Activity (prohibiting HVHF drilling and drilling-related activities in all locations within the Marcellus/Utica Shale where significant seismic activity has previously been recorded or is projected to occur).

To satisfy SEQRA's requirements, DEC should evaluate an "Environmental Hazard Areas Off-Limits" Alternative. Such an alternative is reasonable in that it could still allow DEC to advance its programmatic objectives of shale gas development in less sensitive portions of the Marcellus/Utica. Accordingly, DEC should include an analysis of this alternative in a revised version of its DSGEIS.

5) The "Delayed Action" Alternative

A final reasonable alternative that the RDSGEIS failed to analyze is the "Delayed Action" Alternative. Such an alternative would weigh the pluses and minuses of delaying a final decision on authorization of a large-scale HVHF drilling program until additional information is available from major, ongoing studies. By withholding final action until 2014, the state would have the benefit of additional information from federal agencies and others, enabling it to make a more informed and prudent decision regarding whether and how best to advance a HVHF drilling program in New York.

The RDSGEIS does not analyze such a delayed action alternative. The document mentions and dismisses the "no-action" alternative on the grounds that permanently prohibiting drilling would deprive the state of "substantial economic benefits" and an "important energy

source....”²² But clearly these benefits -- to the extent that the state’s rosy economic projects are accurate in the first place, a matter we and others dispute -- would not be lost by simply delaying implementation for 24 or 36 months, so that the state could amass more complete and detailed information on which to make final HVHF drilling decisions that will guide drilling activities in the state for decades. Moreover, the RDSGEIS does not analyze the potential adverse consequences to the state’s environment (e.g., natural resources, tourism, agriculture, etc.) that would be avoided by deferring drilling while additional information that could reduce drilling’s adverse impacts are gathered from yet-to- be-completed studies.

In sum, since a 24 or 36 month delay in implementing a HVHF drilling program would not jeopardize and of the state’s purported economic benefits or energy resources (since gas deposits would remain locked within the shale and still available at any point in the future, whenever drilling were to commence), it is reasonable for the state to analyze a “Delayed Action” alternative. Such an alternative should fully evaluate the benefits of deferring a final decision until much-needed studies are completed and their results made available to state officials and the public. (At a minimum, the alternative should await the completion of the U.S. Environmental Protection Agency’s on-going national study on the potential impacts of hydraulic fracturing on drinking water resources and the U.S. Energy Department’s recommended field studies on possible methane migration from shale gas wells.)

II. THE RDSGEIS DOES NOT FULLY COMPLY WITH THE SEQRA MANDATE TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

SEQRA requires that an environmental impact statement (EIS) “...shall include...mitigation measures proposed to minimize the environmental impact.”²³ The statute mandates that adverse environmental impacts must be avoided “to the maximum extent practicable.”²⁴ And DEC’s SEQRA Handbook affirms that “[a] discussion of feasible mitigation measures...is a fundamental component of every EIS.”²⁵

The primary vehicle for providing needed mitigation for special and sensitive ecological areas proposed in the RDSGEIS is a series of proposed “prohibitions” on selected activities associated with HVHF drilling. These prohibitions – which, as discussed below, do not actually constitute complete restrictions on HVHF activities – do not offer a complete, legally binding commitment to mitigate the full range of adverse environmental harm that could be expected from the kind of wide-ranging, extensive HVHF drilling program contemplated in the RDSGEIS. In the following sections, we highlight some of the gaps in the proposed RDSGEIS prohibitions, which we believe are examples of legally deficient mitigation measures:

²² RDSGEIS at 9-1.

²³ 6 NYCRR § 617.9(b)(5)(iv). “Mitigation” is defined as “a way to avoid or minimize adverse environmental impacts.” 6 NYCRR § 617.2(x).

²⁴ ECL § 8-0109(1),(8).

²⁵ SEQRA Handbook at p. 126.

1) No Prohibitions Sought for Any Subsurface Drilling Activities

All prohibitions proposed in the RDSGEIS focus solely on site (surface) disturbance.²⁶ This approach mistakenly presumes the absence of subsurface contamination risks during various stages of the gas development process and the need for mitigation of such risks. However, as highlighted in the Technical Comments, there are numerous risks that HVHF poses with respect to short- and long-term subsurface migration of contaminants.²⁷ DEC must address this gap by prohibiting subsurface activity in all areas where surface activity is prohibited.

2) No Prohibitions Applied to Potentially Harmful Low-Volume Hydraulic Fracturing

All prohibitions proposed in the RDSGEIS apply only to *high-volume* hydraulic fracturing operations, i.e., those operations that use 300,000 gallons of water or more.²⁸ Operations that use less than this amount, whether traditional vertical wells or horizontal wells, would still be allowed in prohibited areas such as the New York City and Syracuse watersheds and would not be subject to any of the restrictions set forth in the RDSGEIS and proposed regulations. NYSDEC should address this regulatory gap by prohibiting all gas development activities in these areas.

3) Certain Prohibitions Are Subject to “Reconsideration” After 2 or 3 Years

Many of the state’s “prohibited” buffer areas (e.g., those around primary aquifers, principal aquifers, public water supply wells, and tributaries thereto) include “reconsideration” provisions that would allow the state to consider permitting drilling in these areas and buffer zones within two to three years after measuring “actual experience and impacts associated with permit issuance.”²⁹

This approach fails to provide legally sufficient mitigation for DEC-acknowledged adverse environmental impacts since it envisions potential rollbacks of such mitigation measures after an arbitrary two or three year period. Moreover, DEC fails to set forth any rational criteria or public process for assessing the “actual experience” prior to eliminating the proposed

²⁶ See 6 NYCRR §750.3-3(b).

²⁷ See, e.g., Technical Comments, report of Tom Myers, Ph.D. (“Myers Report”), at 12-15.

²⁸ RDSGEIS at 3-16. Also note that NYSDEC has not properly evaluated the potential impacts of what it considers to be low-volume hydraulic fracturing (i.e. hydraulic fracturing that uses between 80,000 and 300,000 gallons of water), either in this RDSGEIS or the 1992 SGEIS. This is an error that needs to be corrected. See Joint Memorandum at 3 and 4. Regardless, the prohibitions discussed here should apply to all gas development activities, including vertical and horizontal wells that use less than 300,000 gallons of water.

²⁹ RDSGEIS at 9-6.

prohibitions. In addition, these reconsideration provisions are deficient in that they are advanced without regard to the actual pace of gas well development; without knowing the pace and scale of development (and the number of operations that would be evaluated), the two and three year timetables incorporate arbitrary deadlines for a sensible evaluation process. Finally, even without the proposed reconsideration provisions, DEC has the inherent power to reconsider its regulations and propose changes at any time, subject to the public participation and other requirements of SAPA. Accordingly, the proposed prohibitions referenced above should be advanced in the normal fashion and the reconsideration clauses at issue should be withdrawn.³⁰

4) Prohibitions On Drilling Near Public Drinking Water Supplies Are Temporary and Too Modest

DEC proposes to prohibit HVHF drilling operations within 2,000 feet of public water supply wells, river or stream intakes, natural lakes or man-made impoundments and reservoirs,³¹ subject to reconsideration after three years.³² Scientists recognize that current water filtration systems were not designed to filter out the wide range of chemicals expected to be used in HVHF drilling operations.³³ Accordingly, NYSDEC's proposed temporary 2,000-foot buffer for well pad development on the surface of filtered public drinking water supplies is inadequate. Instead, DEC should err on the side of caution and establish much larger, permanent protective buffer areas in and around all watersheds (such as the Finger Lakes) that serve as public drinking water supplies, whether those water supplies are filtered or unfiltered.³⁴

5) Prohibitions re: Private Drinking Water Supplies Are Subject to Waiver

DEC proposes to prohibit well pad development for HVHF drilling within 500 feet of private drinking water wells and domestic use springs.³⁵ However, this "prohibition" can be waived by the landowner.³⁶ There appear to be no procedural requirements for this waiver and no discussion in the RDSGEIS about potential scenarios where the user(s) of such wells may be a tenant and/or other neighboring landowners who share the well and do not consent to the waiver. DEC should remove the provision allowing a landowner to waive prohibitions on well pad development within 500 feet of drinking water wells and domestic use springs.

³⁰ Note that many of the proposed buffer areas and other prohibitions are in themselves inadequate, as addressed below and in the Technical Comments (*see, e.g.*, Technical Comments, summary report of Louis Berger Group, at page 6).

³¹ RDSGEIS at 7-73; proposed 6 NYCRR at 750-3.3(b)(4).

³² *Id.*

³³ *See, e.g.*, Physician, Scientists and Engineers for Healthy Energy, Letter to Governor Andrew Cuomo, Sept. 15, 2011, available at: <http://www.scribd.com/doc/65121866/Sign-on-Letter-Final>.

³⁴ As noted above, NYSDEC should extend these prohibitions to include subsurface activity as well and the protection should be permanent and not subject to reconsideration after three years.

³⁵ RDSGEIS at 7-74; proposed 6 NYCRR § 560.4(a)(1).

³⁶ RDSGEIS at 7-74; proposed 6 NYCRR § 560.4(a)(1).

6) Gaps in the Prohibitions re: Drilling Above Primary and Principal Aquifer

Roughly one quarter of New York State's residents and businesses rely on groundwater as a source of potable water.³⁷ There are 18 Primary Water Supply Aquifers in New York that are underlain by the Marcellus shale and other shale formations.³⁸ These are defined as "highly productive aquifers presently utilized as sources of water supply by major municipal water supply systems."³⁹ Many Principal Aquifers have also been identified and are defined as highly productive systems that are not currently used as sources but where abundant potential public water supplies likely exist.⁴⁰ According to DEC's guidance documents, the only difference between primary and principal aquifers is that primary aquifers are used intensively now and principal aquifers are, in effect, the potential primary aquifers of the future.⁴¹

Despite their importance in meeting New York's water needs, neither Primary nor Principal Aquifers would be fully protected by DEC's proposed mitigation measures. HVHF drilling operations would be prohibited only on the surface of primary aquifers and their corresponding 500 foot buffer zones, subject to reconsideration after 2 years.⁴² This approach is problematic for three reasons. First, it wrongly assumes mitigation of all subsurface contaminant migration issues. Second, it provides for only a meager buffer area that does not consider potential impacts and horizontal drilling technology. Third, as invaluable sources of drinking water, these aquifers should be permanently protected, not subject to a vague and arbitrary reconsideration process.⁴³ DEC should close all of these gaps in their mitigation for primary aquifers.

Principal aquifers fare even worse than primary aquifers under NYSDEC's mitigation plan. The Department proposes only to require site-specific review (which does not guarantee additional environmental impact statements) for drilling on the surface of these potential water supplies.⁴⁴ DEC should also establish buffers that permanently prohibit surface and subsurface activity on and under principal aquifers.

³⁷ RDSGEIS at 2-20.

³⁸ RDSGEIS at 2-20; *see also* Map of Primary Aquifers in New York State, available at: <http://www.dec.ny.gov/lands/36164.html>.

³⁹ RDSGEIS at 2-20; proposed 6 NYCRR § 750-3.2(b)(37)(i); NYSDEC, Technical and Operational Guidance Series, 2.1.3, Oct. 23, 1990 at page 2.

⁴⁰ RDSGEIS at 2-20 proposed 6 NYCRR § 750-3.2(b)(37)(ii); NYSDEC, Technical and Operational Guidance Series, 2.1.3, Oct. 23, 1990 at page 2.

⁴¹ NYSDEC, Technical and Operational Guidance Series, 2.1.3, Oct. 23, 1990 at page 2, available at: http://www.dec.ny.gov/docs/water_pdf/togs213.pdf.

⁴² RDSGEIS at 7-41; proposed 6 NYCRR § 750-3.3(b)(2).

⁴³ See preceding discussion on reconsideration clauses.

⁴⁴ RDSGEIS at 7-40 and 7-41; proposed 6 NYCRR § 750-3.21(f)(4) (noting that the SPDES HVHF General Permit would not cover operations within 500 feet of a principal aquifer as measured from the closest edge of the gas well pad).

7) Prohibitions on Drilling in Floodplains Are Problematic

DEC, to its credit, proposes to prohibit surface disturbances in 100-year floodplains.⁴⁵ But the Department's approach remains problematic for several reasons. First, the prohibition does not apply to subsurface activity in these areas, although intensive storm activities could be disruptive of certain subsurface operations. Second, the proposed prohibitions do not clearly apply to all activities related to HVHF drilling (infrastructure, transportation facilities, holding ponds, etc.).⁴⁶ Third, as DEC acknowledges, the increased frequency and magnitude of flooding has raised concerns regarding the reliability of the existing floodplain maps in the Susquehanna and Delaware River basins.⁴⁷ Indeed, FEMA is currently updating floodplain maps in several high-flood areas in the state.

Accordingly, no permits should be issued before updated floodplain maps are in place for the entire region and these maps are reflected in DEC's environmental review and regulations. Moreover, DEC should extend its proposed prohibition on flood-plain drilling activities to 500-year floodplains.⁴⁸ These maps should be reflective of anticipated changes that may result from climate change, namely the increase in frequency and severity of storm events.⁴⁹

8) Prohibitions re: State Lands Drilling Must be Strengthened

DEC has stated that HVHF drilling would not be allowed on state lands under its jurisdiction because it would be inconsistent with the purposes for which those lands have been acquired.⁵⁰ We agree. However, as stated above, NYSDEC should prohibit drilling on *and under* all state-owned land under the Department's jurisdiction to ensure adequate protection.⁵¹

DEC also notes that land under the jurisdiction of the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP") would have a similar disposition under that agency's current policy.⁵² But in order to stand behind a commitment of fully protecting state

⁴⁵ RDSGEIS at 7-76; proposed 6 NYCRR § 750-3.3(b)(3).

⁴⁶ For instance, proposed 6 NYCRR § 750-3.3(b)(3) defines "Construction phase" as "construction of access roads, wellpad, and other appurtenances," but "appurtenances" is not clearly defined in the draft regulations.

⁴⁷ RDSGEIS at 2-32, 2-33.

⁴⁸ See, e.g., Myers Report at 24.

⁴⁹ See, e.g., Technical Comments, report of Dr. Kimberly Knowlton at 2.

⁵⁰ RDSGEIS at 2-7 and 2-8. Activity within the forever wild Adirondack and Catskill Forest Preserves would be prohibited in compliance with the New York State Constitution. RDSGEIS at 2-7; N.Y. Const. art. XIV §1 ("[State forest preserves] shall be forever kept as wild forest lands. They shall not be leased, sold, or exchanged, or be taken by any corporation, public or private...").

⁵¹ Accessing subsurface resources in these areas would clearly be allowed by NYSDEC. RDSGEIS at 7-101.

⁵² RDSGEIS at 7-101. Note also that NYSDEC stated in the July 2011 that "no surface disturbance associated with horizontal drilling and high-volume hydraulic fracturing would be permitted on State

lands and parks, DEC should prohibit drilling on and under all state-owned forests, reforestation areas, wildlife management areas, campgrounds, environmental education centers and public conservation easements. Additionally, OPRHP should promulgate parallel rules implementing these mitigation measures.⁵³

* * *

For the reasons set forth above, NYSDEC's proposed mitigation for special and sensitive ecological areas in the RDSGEIS and proposed regulations is inadequate and numerous gaps, including those detailed above, must be addressed consistent with SEQRA.

III. THE RSDGEIS FAILS TO FULLY PROTECT THE UNFILTERED DRINKING WATER SUPPLIES OF NEW YORK CITY AND SYRACUSE

New York City's Catskill and Delaware watersheds supply more than half the state's population with unfiltered drinking water. Together with the unfiltered Syracuse water supply, they serve as an international model for watershed protection and sustainable economic development. DEC states that proposed HVHF drilling activity is not consistent with the preservation of these watersheds as an unfiltered drinking water supply. To its credit, the RSDGEIS acknowledges that even with significant mitigation measures, the risks to these unfiltered water supplies from HVHF drilling would be too high. Accordingly, DEC recommends that HVHF drilling activities be prohibited in both the New York City Catskill/Delaware watershed and the Syracuse Skaneateles Lake watershed.⁵⁴

Unfortunately, the RSDGEIS still contains several gaps in the protective blanket for these unfiltered drinking water supplies. We highlight three of the most worrisome holes below:

1) Water Supply Tunnels outside Watershed Boundaries are Unprotected

New York City's Catskill and Delaware reservoirs are connected by a system of tunnels and aqueducts, significant portions of which fall outside the boundaries of the watershed itself. A similar situation exists with respect to the tunnel carrying water from Lake Skaneateles to the city of Syracuse. There are two major risks from drilling in the vicinity of such infrastructure: (1) a threat that seismicity from drilling activities could jeopardize the stability of the tunnels themselves;⁵⁵ and (2) a threat that fracking fluids or other pollutants could migrate from drilling sites into the tunnels via small cracks or fissures in the tunnel walls – threatening the quality of

Forests, or Wildlife Management Areas or State Parks." Preliminary RDSGEIS, July 2011, at 7-108 (emphasis added).

⁵³ Protection should also be applied to NY's Recommended Open Space Conservation Projects and should recognize and incorporate the priorities set forth in New York's Open Space Plan.

⁵⁴ RSDGEIS at 7-56.

⁵⁵ See Technical Comments, report of Briana Mordick.

drinking water carried therein. These risks were detailed in an extensive technical analysis prepared by Hazen and Sawyer consultants to the NYCDEP.

Based upon this technical analysis, NYCDEP previously recommended the creation of a 7-mile no-drilling zone around New York City's aging water supply tunnels (i.e., the West and East Delaware Tunnels, the Neversink Tunnel and the Delaware Aqueduct).⁵⁶ (Under normal conditions, these tunnels transport at least half of the daily water consumed by more than 9 million residents in New York City and surrounding counties.) And, in recent testimony before DEC, city officials reiterated their concerns about HVHF drilling operations' potential to penetrate water supply tunnels directly, to stimulate micro-seismic activity, to create pressure differentials around tunnels, and to contaminate the water supply.⁵⁷

However, in a crucial omission, the RSDGEIS does not recommend putting this infrastructure and the NYCDEP-recommended seven-mile buffer zone off-limits to new drilling. Instead, the document proposes a setback of 1,000 feet from such infrastructure, within which drilling would still be possible following a site-specific SEQRA analysis and DEP sign-off.⁵⁸ To make matters worse, we understand that NYCDEP is itself backing away from advocating for the comprehensive 7-mile no drilling zone it was previously recommending -- in response, we believe, to pressure from DEC. (Meanwhile, with respect to the Syracuse water supply infrastructure, DEC's HVHF drilling proposal also contains no specific provision for protecting that delivery system, which consists of miles of pipes that deliver water from Skaneateles Lake to Syracuse area residents and businesses.)

Accordingly, DEC should prohibit drilling within a 7-mile buffer area around the New York City and Syracuse's water supply infrastructure tunnels. It makes little sense to safeguard the massive Catskill and Delaware watershed land areas from the dangers of HVHF drilling and yet fail to similarly protect the essential tunnels that transport unfiltered water from them to other reservoirs and ultimately to millions of downstate New Yorkers.

2) Prohibitions on Drilling Near Reservoir Dams are Woefully Inadequate

A second major concern with respect to the coverage gaps of the RSDGEIS as it applies to the New York City drinking water supply is its failure to propose drilling prohibitions in the vicinity of New York City's massive, aging and vulnerable reservoir dams. These dams, all of which are at least a half century old, were not designed to withstand HVHF drilling and drilling-

⁵⁶ Hazen and Sawyer, Final Impact Assessment Report, December 2009, available at:

http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf.

⁵⁷ Testimony of Paul V. Rush, P.E., Deputy Commissioner, Bureau of Water Supply, New York City Department of Environmental Protection, before the New York State Department of Environmental Conservation, November 30, 2011, available at:

http://www.nyc.gov/html/dep/html/testimony/hydrofracking_revised_sgeis_11302011.shtml.

⁵⁸ RSDGEIS at 7-68.

related activities on surrounding lands. And any drilling-related activities that weaken the structural integrity of the dams could have potentially catastrophic costs to life and property.

Despite these obvious dangers, the RSDGEIS proposes only the most limited buffer area to safeguard these structures from industrial drilling activities. The dams themselves are all at the edge of the watershed boundaries. As such, they would be protected, under the RSDGEIS scheme, only by a 4,000 foot setback. DEC asserts that such a buffer would “provide an adequate margin of safety from the full range of operations related to high-volume hydraulic fracturing.”⁵⁹ But nowhere in the RSDGEIS does DEC offer proof of that proposition, and NYCDEP has directly contradicted that assumption. For example, in testimony before the New York City Council’s Environmental Protection Committee on September 22, 2011, NYCDEP Deputy Commissioner Paul Rush noted that the 4,000 foot drilling setback could conceivably allow a horizontal drilling leg to extend close to or even under a New York City watershed dam itself. Clearly, a much larger buffer area is necessary to safeguard these dams.

Accordingly, DEC should revise its RSDGEIS to propose a significant increase in the size of its no-drilling zone around New York City’s watershed, to account for the potential length of horizontal drilling technology expected to be employed in combination with HVHF drilling and to truly provide an adequate additional margin of safety.⁶⁰ NRDC recommends that the state establish no less than a five mile no-drilling zone around New York City’s Catskill and Delaware reservoir dams.

3) Prohibitions Lacking for Watershed Potentially Dangerous Gas Drilling Operations Using Less than 300,000 Gallons of Water

A third gap in the protective umbrella of the RSDGEIS with respect to the unfiltered New York and Syracuse drinking water supplies is the document’s failure to prohibit vertical drilling and low-volume hydraulic fracturing in these watersheds. “Low-volume” hydraulic fracturing drilling also presents risks of spills, contamination, blowouts, dangers to infrastructure, etc., even if on a somewhat smaller scale than HVHF drilling. As noted, to its credit, DEC has recognized that, for sound hydrological and economic reasons, the unfiltered Syracuse and New York City water systems warrant special protection. (Illustrating a key reason why, New York City has recently estimated that the capital costs alone of filtering the Catskill and Delaware system

⁵⁹ RSDGEIS at 7-56.

⁶⁰ See, e.g., Press Release, Chesapeake Energy Corporation, Chesapeake Energy Corporation Discloses Initial Horizontal Well Drilling Results in its Utica Shale Discovery and Announces Achievement of Corporate Production Milestones (Sept. 28, 2011), available at: <http://www.chk.com/news/articles/pages/1610725.aspx> (indicating that of Chesapeake’s four completed lateral wells in the Utica Shale of Ohio and Pennsylvania, all extended horizontally over 4,000 feet and two extended over 6,000 feet).

would exceed ten billion dollars and result in significant spikes in water rates for millions of downstate water users.)

Under these circumstances, DEC should foreclose the possibility of all industrial gas drilling activities -- whether high-volume or low-volume, and whether employing vertical or horizontal wells -- within the unique Catskill/Delaware and Skaneateles watersheds. NRDC recommends that DEC revise its RSDGEIS to prohibit this heavy industrial activity in all of its incarnations.

CONCLUSION

For the reasons set forth above, NRDC respectfully urges DEC to issue a new revised DSGEIS that addresses the issues raised in this letter and in our accompanying submittals.

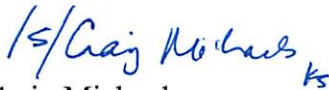
Sincerely,



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