The Pivotal Role of SEQRA in Marcellus Shale Natural Gas Development

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Introduction

The New York State Environmental Quality Review Act (SEQRA) has recently come under review itself as New York State attempts to understand and regulate the rush to extract natural gas from the Marcellus Shale region. This formation outcrops in the Finger Lakes region of New York and then submerges up to 7,000 feet under Pennsylvania, Ohio, and West Virginia.\(^1\) It is estimated that the shale contains 168 trillion to 516 trillion cubic feet of natural gas,\(^2\) enough to meet total U.S. demand for five to ten years;\(^3\) however, these figures fluctuate frequently as development continues and new information is discovered. The gas drilling technology includes both horizontal gas drilling, where a well is drilled vertically and then turned horizontally for several thousand feet, and hydraulic fracturing (fracking), where water, sand, and lubricating fracking fluids are pumped down the well under high pressure to hold shale fractures open and allow the gas to flow into the well.\(^4\) Horizontal drilling has occurred in New York for over thirty years and hydraulic fracturing for over sixty.\(^5\) Natural gas development has been regulated by the 1992 Generic Environmental Impact Statement (GEIS), which must accompany drilling permit applications and allows the New York State Department of Environmental Conservation (DEC) to review the potential environmental impacts and mitigation strategies of natural gas drilling.\(^6\)

However, the gas drilling currently taking place in the Marcellus and as projected for the

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\(^4\) See NYSDEC, Marcellus Shale, supra note 2.

\(^5\) See id.

\(^6\) See id.
New York portion consists of large-scale development through multi-well pads and high-volume production.⁷ The potential environmental impacts of this rapid, intensive growth are different and more extensive than those experienced with traditional drilling. Particularly outstanding are the increased use of water, the resulting increased production of waste fluids, and the associated difficulties in wastewater treatment and disposal.⁸ Because of these new environmental concerns, DEC has issued a moratorium on drilling permits until the completion of a supplemental GEIS (SGEIS).⁹

New York State is wise to take the time to study the effects of horizontal drilling and fracking, as other states in the Marcellus that have given permits are struggling to keep up with demand and the resulting impacts. The problems incurred range from severe road damage caused by frequent, heavy truck traffic to polluted waterways caused by inadequate wastewater treatment programs. The State Environmental Quality Review (SEQR) process tries to account for such impacts by requiring the agency approving the activity (here, the DEC, which gives the permits to drill) to identify and mitigate significant environmental impacts. Nonetheless, confronted with a looming national energy crisis, stifling budget deficits on the state and local levels, and a concerted push from lease-holding landowners and industry members, it is unclear whether SEQRA can adequately balance these goals with that of environmental protection. Considering the lack of legal remedies through common law, municipal ordinance, or federal statutes, it is imperative that New York think about how it can encourage smart economic development and maintenance of its life-giving environment as well as what role SEQRA plays in this endeavor.

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⁸ See id.
⁹ See NYSDEC, Marcellus Shale, supra note 2.
In this paper, I aim to establish a context for natural gas development in the Marcellus, explore the expected and unexpected environmental impacts of such development, and examine the ability of SEQRA to provide adequate environmental protection and guidance to industry. In Part I, I briefly explain the geology of the Marcellus Shale, the horizontal drilling and hydraulic fracturing technologies, the SEQRA supplemental GEIS process, and the public concern accompanying this development. In Part II, I use newspaper articles, documentaries, municipal reports, and personal accounts as an attempt to cut through hypothetical estimates of what environmental effects New York can anticipate and to develop a more grounded projection based on actual experiences in the Marcellus and the Texas Barnett Shale. Without such a study, it is difficult to understand the associated public concern and to engage in a fruitful discussion of SEQRA’s strengths and weaknesses. In Part III, I discuss how SEQRA started and how effective it is at regulating natural gas development in New York.

I. Natural Gas Drilling in New York State

A. The Marcellus Shale and Hydraulic Fracturing

At its deepest, the Marcellus Shale lies 7,000 feet underneath layers of sandstone, siltstone, and other shales, but in New York, it begins above ground in the north and east and runs to depths of about 5,000 feet in the southern part of the state.\(^\text{10}\) Due to compression and heating over time, the shale contains natural gas deposits in small pore spaces between mineral grains.\(^\text{11}\) The Marcellus is believed to be most productive gas play in the world, with reserves estimated at over 500 trillion cubic feet, as discussed above. The Barnett Shale in Texas is also

\(^{10}\) See NYSDEC, DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM (dSGEIS) 4-15, 4-19 (2009).

\(^{11}\) See SOEDER, supra note 1, at 2.
very productive, with 26 trillion cubic feet estimated in reserves. There are many other shale plays throughout the U.S., but most have yet to be explored extensively. Until recently, there was little interest in shale gas because natural gas prices were low and production technology was relatively undeveloped. Today however, in addition to the upswing in price, technology has advanced such that companies can combine horizontal drilling with hydraulic fracturing to access gas previously locked in low-permeability shale formations.

The drilling process begins with site clearance and the construction of the well pad, accessory structures, and access roads. Well pads can be placed 640 acres apart, and many wells can be drilled from one well pad. The well is then drilled to the Marcellus formation and turned horizontally, staying a certain distance from the spacing unit boundary. The horizontal part of the well can reach about 6400 feet and possibly more with advances in technology. After the well is drilled, it must be cased with cement so that freshwater from aquifers and natural contaminants (mostly brine but also some metals and naturally occurring radioactive materials (NORMs)) do not mix or interfere with the gas extraction. The outer, surface casing extends below groundwater levels, and the inner, production casing extends from the ground surface to the well before it turns horizontal; there may be other layers of casing depending on well depth.

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14 See Soeder, supra note 1, at 3.
15 See id.
16 See generally DSŒIS, supra note 10, at Chapter 5 (including the table summarizing the drilling and fracking process on page 5-124–125); FIAR, supra note 13, at 4–6 (describing the drilling and hydraulic fracturing process in more detail than the description below).
17 N.Y. ENVTL. CONSV. LAW §23-0501.
18 See Mike Lovegreen, Manager, Bradford County Conservation District, Presentation to the Cornell Law School Land Use Law Clinic (Feb. 23, 2010).
19 See DSŒIS, supra note 10, at 5-91; Groundwater Protection diagram, New York State Department of Environmental Conservation, http://www.dec.ny.gov/docs/materials_minerals_pdf/gwprotection.pdf (indicating the
Hydrofracking can then begin. Water, sand, and fracking fluids are injected into the well at very high pressure to create fractures in the shale and hold them open so that gas can escape more easily. After drilling and stimulation, most equipment is removed from the site and is replaced with pumping equipment, tanks to store contaminated (produced) water, and pipelines. Wells can be re-fractured many times to boost productivity.

B. Supplemental Generic Environmental Impact Statement Process

The State Environmental Quality Review Act, “implemented by regulations most recently updated in 1996, establishes a process to systematically consider environmental factors early in the planning stages of actions that are directly undertaken, funded or approved by local, regional and state agencies.”20 There are twelve steps to the SEQR process.21 SEQR is triggered when a state or local agency has the ability to, among other things, issue a discretionary permit for an action.22 In the case of natural gas drilling in the Marcellus, the DEC is the agency that issues well permits to drill. “Action” is then divided into Type I, requiring further SEQR review; unlisted, also requiring further review; or Type II, requiring no further review due to a determination that it will not have a significant environmental impact.23 If an action is unlisted, then the parties typically move on to step three where the project sponsor completes one part of a short Environmental Assessment Form (short EAF) and submits it to an involved agency.24 If

various casing levels for a vertical well).
22 See id. at 3.
23 See 6 NYCRR 617; THE SEQR COOKBOOK, supra note 21, at 4.
24 See THE SEQR COOKBOOK, supra note 21, at 5.
only one agency is involved, it becomes the lead agency;\footnote{25} in the case of drilling in the Marcellus, DEC is the agency because it has exclusive authority to regulate oil and gas drilling.\footnote{26} The lead agency will complete the rest of the short EAF and may require a full EAF if more information is needed or may waive the EAF requirement if a draft EIS will be prepared.\footnote{27}

DEC is authorized to use \emph{generic} environmental impact statements “to assess the environmental impacts of separate actions having generic or common impacts.”\footnote{28} DEC issued a generic environmental impact statement in 1992 that reflected its finding that “issuance of a standard, individual oil or gas well drilling permit anywhere in the state, when no other permits are involved, does not have a significant environmental impact.”\footnote{29} This includes drilling above an aquifer.\footnote{30} Under these circumstances, an applicant would submit and allow for the following with its well drilling permit application: (1) a short, project-specific EAF Addendum,\footnote{31} (2) a well location plat, (3) proposed site-specific drilling and well-construction plans, (4) a DEC site visit, and (5) GIS-based location screening.\footnote{32} The GEIS would support all applications. As long as the actions conformed to the statement conditions, no further SEQRA compliance was necessary.\footnote{33} DEC did find in 1992 that a full EAF and site-specific SEQRA determination would be necessary for the following types of permit applications: a location that requires other DEC permits or is State Parkland, an Agricultural District, or within 2,000 feet of a municipal water supply well.\footnote{34}

\footnote{25 See id. at 6.}
\footnote{26 See DSGEIS, supra note 10, at 1-5.}
\footnote{27 See THE SEQR COOKBOOK, supra note 21, at 5.}
\footnote{28 DSGEIS, supra note 10, at 3-1.}
\footnote{29 Id. at 1-3. See generally DSGEIS CHAPTER 3.}
\footnote{30 See id.}
\footnote{31 An EAF Addendum is required with the initial drilling permit application as well as with applications to drill subsequent wells on the pad or re-fracturing of an existing well. See DSGEIS, supra note 10, at 3-8.}
\footnote{32 See id. at 1-5.}
\footnote{33 See 6 NYCRR 617.10(d)(1).}
\footnote{34 See DSGEIS, supra note 10, at 1-3.}
The DEC is producing a supplemental GEIS to examine the particular aspects of horizontal drilling and high-volume hydraulic fracturing in the Marcellus Shale and other low permeability regions. The most significant considerations for the SGEIS include (1) the increased use of water beyond the scope of the GEIS, (2) the longer drilling time and potential impacts at multi-well sites, and (3) the potential for drilling in or near the New York City Watershed. The SGEIS will apply to permits to “drill, deepen, plug back or convert wells for horizontal drilling and high volume hydraulic fracturing.” High volume hydraulic fracturing equates to 300,000 gallons or more of water used for a single frac job. Use of 80,001 to 299,999 gallons may be high volume, and companies projecting such use must complete certain portions of the EAF Addendum. Use of 80,000 gallons or fewer is not considered high volume, and compliance with the GEIS is sufficient. DEC considers the scope of the project as including the well pad and its access road, unless there are proposed surface water withdrawals or centralized flowback water surface impoundments; in this case, the scope of these projects are included upfront.

DEC released a scoping document and held public meetings in November and December 2008. With 188 verbal comments and over 3,770 written comments, DEC issued the Final Scope in February 2009, outlining the issues to be addressed in the draft SGEIS (dSGEIS). DEC submitted the dSGEIS for public review in September and extended the deadline to December 2009. Once DEC issues the final SGEIS, drilling companies can begin submitting permit applications under the following circumstances:

1) An EAF Addendum for High-Volume Hydraulic Fracturing will be required in

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35 See NYSDEC, Marcellus Shale, supra note 2.
36 See dSGEIS, supra note 10, at 1-4.
37 Id. at 2-2.
38 Id. at 3-5–6.
39 Id. at 3-6.
40 See id.
41 See dSGEIS, supra note 10, at 3-6.
42 See NYSDEC, Marcellus Shale, supra note 2.
addition to the other well permit application materials. The EAF Addendum will provide the information necessary for Department staff to determine the next step based on the SGEIS Supplemental Findings Statement.

2) In cases where the SGEIS Supplemental Findings Statement indicates that the GEIS and the Supplement satisfy SEQRA, Department staff will not make Determinations of Significance or issue Negative or Positive Declarations. Such projects have common potential impacts, and the GEIS and [the] Supplement identify common mitigation measures that will be implemented through existing regulatory programs and permit conditions. Staff will file a record of GEIS/SGEIS consistency and process the well permit application. Permit conditions will be added on a site-specific basis to ensure that the permitted activities will not have a significant effect on the environment.

3) If the proposed action is not addressed in the GEIS and the Supplement, then additional information will be required to determine whether the project may result in one or more significant adverse environmental impacts. The projects that the Department proposes fall into this category are listed in Section 3.2.3. Depending on the nature of the action, the additional information may include the Full EAF; topographic, geological or hydrogeological information; air impact analysis; chemical information or other information deemed necessary by the Department to determine the potential for a significant adverse environmental impact. A site-specific or project-specific supplemental environmental impact statement may be required.

4) A supplemental findings statement must be prepared if the proposed action is adequately addressed in the GEIS and the Supplement but is not addressed in the GEIS Findings Statement or the SGEIS Supplemental Findings Statement.  

The dSGEIS considers environmental impacts and mitigation measures relating to water resources, wetlands, air quality, greenhouse gas emissions, NORMs, visual and noise impacts, road use, and community character, among others. The draft proposes many new mitigation measures for the final SGEIS, from spill response techniques to on-site reserve pit specifications. Although the approximately 800-page dSGEIS appears comprehensive, there is concern, articulated further below, that the associated enforcement obligations will overwhelm

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43 DSGEIS, supra note 10, at 3-4–5 (citing section 3.2.3, which lists projects such as a proposed well pad within 300 feet of a reservoir or within 150 feet of a private water well that require a site-specific SEQRA determination).
44 See DSGEIS, supra note 10, at 7-27–28.
45 See id. at 7-30–31.
DEC. There are also noticeable gaps, such as this statement from the draft: “Although they may be subject to the reporting and registration requirements described below, surface and ground water withdrawals that are not on Long Island and not for drinking water supply currently are unregulated unless the withdrawals occur within the lands regulated by the Delaware River Basin Commission and the Susquehanna River Basin Commission.” Nonetheless, as of this writing, the DEC has not issued the final SGEIS, which may address some of these concerns and those described below.

C. Public Concern

Public concern relates to many aspects of the drilling process as well as to the regulatory procedure and political input that are guiding the scope and pace of development. The more than 10,000 public comments received during the dSGEIS stage reflect some discontent or at least uncertainty, but after reading newspaper articles and personal accounts, it is clear that the concern runs deep. Some of the concern in New York is that the state is moving too slowly in crafting the SGEIS, preventing industry from taking advantage of leases already signed and turning them off from further exploration as well as preventing lease-holding landowners from collecting royalty payments. Much of the public concern, however, is just the opposite—that the state is moving too quickly in preparing the SGEIS such that it is not adequately considering the potentially severe impacts on the environment and on local economies and infrastructure. There is also a fear that the protections written into the SGEIS will not be translated into reality.

The dSGEIS contemplates 187 new responsibilities for DEC personnel in the way of permitting,

46 Id. at 7-4.
inspections, and record keeping, and there are currently only seventeen inspectors in DEC’s Division of Mineral Resources to oversee quadruple or more growth in the state’s natural gas industry. Describing the significant confusion over the leasing process and the resulting discontent with some leases is beyond the scope of this paper, but the fact that many people are unhappy with the way they were approached about leasing, the fact that they signed leases at all, or the terms of the leases lends support to the other concerns that New York is not yet prepared for the influx of natural gas development.

To fully appreciate these concerns and ultimately to critique the role of SEQRA in regulating natural gas drilling, it is necessary to understand the environmental and community impacts as seen in other regions and consider what might happen in New York. I address these impacts in Part II, where I examine (1) the expected impacts of natural gas drilling, those that occur in the normal course of business, such as noise, road damage, and stress on wastewater treatment facilities and (2) the unexpected impacts, those results of natural gas drilling that arguably occur in rare instances, such as groundwater and surface water contamination. Some of these findings conflict with DEC’s research in the dSGEIS; however, first-hand information is important in creating an accurate picture of what natural gas drilling will look like in New York.

II. Projected Environmental and Community Impacts

A. Expected Impacts

1. Noise

According to the dSGEIS, “moderate to significant noise impacts may be experienced

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within 1,000 feet of a well site during the drilling phase.” Noise sources, which continue for 24 hours a day, include “drilling rig operations, pipe handling, compressors, and operation of trucks, backhoes, tractors and cement mixing.” A resident in Van Etten, New York described her family’s experience this way: “24-hour-a-day drilling, ramming noise, lit up all night.” Residents in DISH, Texas have complained about the noise and vibrations of compressor stations on drilling sites, which, among other complaints, led to an ambient air quality investigation. “Considerable noise was present in all directions favorable with the wind patterns. Compressors exhibited both the operation high pitch whirl as indicated by elevated decibel readings and heavy low decibel vibration tones.” Noise pollution is a significant concern of the Allegheny Defense Project and was highlighted in a recent documentary on natural gas development in Colorado. Consider also the noise associated with heavy truck traffic, often on small, rural roads, described further in subpart 3.

2. Air Pollution

Residents in Colorado have noticed a decrease in air quality due to extensive drilling. An air quality study conducted in DISH, Texas confirmed multiple Recognized and Suspected Human Carcinogens, as determined by the state environmental agency, in its air at various test locations. Levels of air pollutants also exceeded the agency’s Short Term and Long Term

50 DSGEIS, supra note 10, at 7-107.
51 Id. at 7-108.
53 TOWN OF DISH, TEXAS AMBIENT AIR MONITORING ANALYSIS FINAL REPORT 3 (Wolf Eagle Environmental Engineers and Consultants, LLC, 2009), http://www.townofdish.com/objects/DISH_Air_Study.pdf [hereinafter DISH REPORT].
54 Id.
56 Rural Impact! (Two Cent Films and Crestone Media), http://www.tiogaslease.org/environment.html.
57 Id.
Effects Screening Levels (ESLs), and some testing locations registered chemicals with “disaster potential.” 58 The pollutants typically are associated with natural gas exploration, drilling, flaring and compression, and there is almost no heavy industry in DISH aside from the drilling, so it is unlikely that the pollutants came from elsewhere. 59

A study conducted on the emissions from oil and gas production in the Barnett Shale region also revealed evidence of significant air pollution, although the figures for natural gas are not isolated. 60 This region in Texas supported 7,700 wells in June 2008. 61 Sources of air pollution include “compressor engine exhausts, oil and condensate tank vents, production well fugitives, well drilling and hydraulic fracturing, well completions, natural gas processing and transmission fugitives.” 62 The results, presented comparatively, were as follows:

A recent emissions inventory has estimated 2009 NOx emissions from all [Dallas-Fort Worth] area airports to be approximately 14 tpd [tons per day], with VOC [volatile organic chemical] emissions at approximately 2.6 tpd, resulting in total ozone and particulate matter precursor emissions of approximately 16 tpd. For comparison, emissions of VOC + NOx in summer 2009 from just the compressor engines in the Barnett Shale area will be approximately 65 tpd, and summer condensate tanks emissions will be approximately 146 tpd. 63

3. Road Damage and Traffic Disruption

The dSGEIS estimates the number of truck trips throughout the life of a well at 890–1340, with mitigation possible through multi-well pads, reused flowback water, and centralized water

58 DISH REPORT, supra note 53, at 6. “The ESLs are established limits of exposures to chemicals based on their potential for adverse health effects, odor/nuisance potential and effects on vegetation.” Disaster potential is defined as chemicals with high toxicity to human life, among other things. Id. at 5.
59 Id.
61 Id. at 1.
62 Id. at 5.
63 Id. at 25.
impoundments that may make it economically feasible to pipe water to the site.\textsuperscript{64} The United States Geological Survey (USGS) Fact Sheet expresses concern that transporting equipment, vehicles, and supplies to drill sites over rural roads could cause erosion and the release of sediment into local water systems.\textsuperscript{65} The same effect is possible due to drill pad and pipeline construction.\textsuperscript{66}

While such impacts are not certain due to the relatively low level of drilling in New York at this time, significant road damage and traffic disruption have already been reported in the Barnett Shale region of Texas and in Pennsylvania.\textsuperscript{67} A study from Denton, Texas revealed that during all three phases of drilling (pad site preparation, fracking, and maintenance) the average number of one-way truck trips was 592/day/well, with some vehicles weighing 100,000 pounds.\textsuperscript{68} According to the USGS, “this could be a significant problem if carried out across thousands of active drill sites.”\textsuperscript{69}

Bradford County in Northern Pennsylvania, which has recently experienced rapid drilling development, is finding that even state roads with adequate hard top are breaking up from the heavy truck traffic.\textsuperscript{70} The County’s 1500 miles of dirt roads are many times impassable, sometimes even to the drilling trucks themselves. Although Bradford County officials report that the drilling companies fix the roads as they break, this sometimes is not adequate for residents who cannot get out of their driveway or for emergency vehicles that cannot use the roads. In addition, the constant road repair has lead to even more truck traffic and shortages in the region’s

\textsuperscript{64} DSGEIS, supra note 10, at 6-138–139.
\textsuperscript{65} SOEDER, supra note 1, at 4.
\textsuperscript{66} Id.
\textsuperscript{67} Id.; Rural Impact!, supra note 56.
\textsuperscript{68} THE GAS DRILLING TASK FORCE, SULLIVAN COUNTY, NEW YORK, PREPARING FOR NATURAL GAS DEVELOPMENT: UNDERSTANDING IMPACTS AND PROTECTING PUBLIC ASSETS 12 (2009), http://www.co.sullivan.ny.us/documentView.asp?docid=768 [hereinafter SULLIVAN REPORT].
\textsuperscript{69} SOEDER, supra note 1, at 4. See also Sullivan Report, supra note 68, at 13.
\textsuperscript{70} See Lovegreen, supra note 18.
stone quarries. The water quality impacts from erosion and sediment are also significant.

4. Land Conversion and Visual Impacts

The area cleared for horizontal wells is about five acres and slightly larger for multi-well pads. Bradford County is finding that the land cleared for impoundments (open pits that store water and drilling flowback fluid, can be up to an additional ten acres. The county also hosts about twenty storage areas for pipes and equipment, each about five to ten acres in size, with about six permit requests per month to develop new sites. Pipeline easements vary in size from small to many meters; they are often thirty feet wide for gathering lines and sixty feet for transmission lines. Bradford County is seeing applications for gathering line easements at 50 to 150 feet wide. Seismic lines to collect subsurface data about the location of gas deposits typically measure six to nine meters across and run for several miles at 400 to 100 meters apart. New roads, whether in the form of unmanaged trails or paved paths, are “rarely decommissioned since there is a chance that the energy firm may return to re-activate the well, the public now uses the road and/or the cost of road deactivation and reclamation is too expensive.”

Clearing swaths of land leads to habitat fragmentation, especially in forested areas, which in turn can introduce invasive species and impact native wildlife. A study conducted in Alberta, Canada found reductions in populations of species dependent on old-growth forests and

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71 DSGEIS, supra note 10, at 6-132.
72 See Lovegreen, supra note 18.
73 See id.
74 DSGEIS, supra note 10, at 26.
76 See Lovegreen, supra note 18.
77 THOMAS BRAUN AND STEPHEN HANUS, FOREST FRAGMENTATION—EFFECTS OF OIL AND GAS ACTIVITIES ON ALBERTA FORESTS 4 (2005), http://www.beg.utexas.edu/energyecon/thinkcorner/Forest_Fragmentation_Alberta.pdf [hereinafter ALBERTA REPORT].
78 Id. at 5.
79 Woodring, supra note 75, at 1.
continuous forest habitat due to oil and gas drilling. Cutting large openings into forests can subject trees to sunscald, frost cracking, windthrow, and wind snap, ultimately killing or felling them.

The drilling rig for a horizontal well could be 140 feet tall or more and would be in place for four to five weeks for drilling and three to five days for fracturing; multi-well pads would likely have 170-foot rigs. Other visual features include construction equipment, trucks, compressors, pipe racks, temporary work sheds, lined pits, and tank trucks holding fluids. Longer-term visual impacts include “an assembly of wellhead valves and auxiliary equipment such as meters, a dehydrator, a gas-water separator, a brine tank and a small fire-suppression tank.”

5. High Water Use and Aquifer Depletion

Hydrofracturing can use up to three million gallons of water per treatment, although Bradford County is finding that hydrofracturing in the Marcellus is using about four to six million gallons of water. Such high usage has caused regional and local water management agencies to question “where such large volumes of water will be obtained and what the possible consequences might be for local water supplies.” The non-profit organization Clean Water Action reports that several streams in Pennsylvania have dried up due to hydrofracking’s intensive use of water. The Delaware River Basin Commission in the fall of 2009 was reviewing a request to withdraw 75% of the water from the West Branch of the Upper Delaware

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80 ALBERTA REPORT, supra note 77, at 10.
81 Woodring, supra note 75, at 2.
82 DSGEIS, supra note 10, at 6-132.
83 Id. at 6-133.
84 See Lovegreen, supra note 18.
85 SOEDER, supra note 1, at 4.
River, with potential detrimental impacts on Philadelphia’s water supply as well as on the Upper Delaware generally, which is designated as Special Protection Waters.\textsuperscript{87} Chesapeake Appalachia, LLC later rescinded its application.\textsuperscript{88} Nonetheless, the prospect of such large water withdrawals generally is considered a serious cause for concern.\textsuperscript{89}

That being said, the Susquehanna River Basin Commission stated in February 2009 that “the cumulative impact of consumptive use by this new activity (natural gas development), while significant, appears to be manageable with the mitigation standards currently in place.”\textsuperscript{90} Gas drilling is expected to consume less than six percent of the total use for water supply, power, and recreation in the Susquehanna River Basin.\textsuperscript{91} Nonetheless, the dSGEIS notes that “[t]he total volume of water to be withdrawn for horizontal well drilling and associated high volume hydraulic fracturing will not be known until applications are received and reviewed.”\textsuperscript{92} In addition, water withdrawals for fracking are considered 100\% consumptive; water supplies are not returned to the basin’s hydrological cycle. The dSGEIS spends four pages discussing the impacts associated with improperly controlled water withdrawals.\textsuperscript{93} Impacts include reduced stream flow, degradation of a stream’s best use, aquatic habitat and ecosystem disruption, damage to downstream wetlands, and aquifer depletion.

6. Stress on Wastewater Treatment Facilities

There is concern that local wastewater treatment plants will not be able to accommodate

\textsuperscript{87} Id.
\textsuperscript{89} SULLIVAN REPORT, supra note 78, at 9.
\textsuperscript{90} DSGEIS, supra note 10, at 7-21–22.
\textsuperscript{91} Id. at 6-11.
\textsuperscript{92} Id. at 6-10.
\textsuperscript{93} Id. at 6-4–8.
the wastewater resulting from the hydrofracturing process, which, including the added chemicals, can contain “a variety of formation materials, including brines, heavy metals, radionuclides, and organics.”94 For example, no plant in Pennsylvania can currently remove total dissolved solids,95 and the most developed technology will not be ready for use until at least 2013.96 Drilling companies in Eastern Pennsylvania seem to be sending flowback fluids to the western part of the state for treatment or disposal through injection wells. The waste is also being trucked to New York and Ohio. One treatment plant proposed for Athens Township, Pennsylvania would pump water through skim ponds and then filter the water to remove and condense chemicals into sludge to be shipped off-site.97 The permit application for the plant expresses concern that the sludge will be rendered radioactive waste due to the concentration of “Radium 226, Radium 228, Gross Alpha, and Gross Beta.”98

Although Pennsylvania has over 100 years of experience with oil drilling, it was “caught off guard” by the amount of waste produced in Marcellus Shale natural gas drilling.99 Pennsylvania estimates that, by 2011, natural gas drilling will produce 19 million gallons of wastewater per day in the state alone.100 High saline levels in some Appalachian rivers have been linked to the disposal of brines from Marcellus Shale drilling.101 Other methods of disposal, such as reinjection and evaporation from an open tank, do not seem suitable to the

94 SOEDER, supra note 1, at 5.
95 Total dissolved solids and their impact on human and environmental health are explained in more detail below, in the Surface Water Contamination section.
98 Id.
99 Id.
100 Bloom, supra note 86.
101 SOEDER, supra note 1, at 5.
Marcellus Shale region due to the high water table and the humid climate. It is possible that drilling companies might release this “flowback” to surface waters as long as the release does not violate the State’s water quality standards established under Section 303(c)(1) of the Clean Water Act. Some states consider wastewater disposal to be the biggest challenge in the drilling process, a challenge that might lead to illegal disposal of waste.

B. Unexpected Impacts

1. Groundwater Contamination

The Congressional Research Service report released on September 9, 2009 examines the nature of natural gas drilling in the Marcellus Shale region. The report contends that while groundwater contamination from improper drilling and casing is a possibility, as it is for any type of drilling, the risk of contamination in the Marcellus region is remote. First, the shale above groundwater sources is “typically much greater than the height of the fractures induced during hydraulic fracturing.” Second, engineers want to ensure that the fractures remain in the shale so that saline fluids or brines do not enter the shale and disturb production.

Nonetheless, the Report goes on to describe a variety of scenarios where groundwater contamination could occur. First, fluid from the drilling well that is pumped back to the surface can contaminate shallow groundwater if the fluids are disposed of improperly. The Report
indicates that this potential contamination poses a particular risk in the permeable “unconsolidated sand and gravel deposits” in northern Pennsylvania and southern New York because of the short distance from the land surface to the water table. 109 These water sources are listed as “primary” or “principal” aquifers in New York, meaning they “are highly productive and presently utilized as a significant source of water, or are a potentially abundant water supply.”110 Second, fracking fluid can infiltrate domestic water wells that are not cased from the surface or properly constructed. Other processes that can lead to contamination include seismic testing to determine the thickness of shale and improper plugging of an abandoned well.111

The New York City Department of Environmental Protection (NYCDEP) is very concerned about possible groundwater contamination because many aqueducts, tunnels, and reservoirs, which feed the Hudson River and ultimately provide the city’s drinking water, lie within 500 to 1500 vertical feet of the Marcellus Shale formation. 112 Casing or grouting failures, pipe corrosion, or poor cementing could create pathways between water supply structures and fluids containing brine water, hydrocarbons, heavy metals, radionuclides or other potential contaminants. 113 It is also possible that chemicals in fracturing fluid may migrate beyond the fracture zone through naturally occurring fractures or induced fractures beyond the target formation. 114

109 Id.
110 Id.
112 RIAR, supra note 105, at ES-4.
113 Id. at 33.
114 Id. at 35.
The USGS Fact Sheet expresses concern over the possibility of contamination through spills or leaks of fluids or chemical additives as they are transported and handled.\textsuperscript{115} Where the fracking requires three million gallons of water, it will result in about 15,000 gallons of chemicals in the wastewater due to additives.\textsuperscript{116} Indeed, in late 2008 near Parachute, Colorado, about 1.6 million gallons of used fracking fluid leaked from a waste pit, soaked into the ground, and ultimately reached the Colorado River.\textsuperscript{117} Similar leaks have occurred in Utah and New Mexico.\textsuperscript{118} Manhattan Borough President Scott Stringer released a report in February 2009 that listed seven states with “serious incidents of water contamination near hydraulic fracturing drilling sites,” including Alabama, Colorado, Montana, New Mexico, Ohio, Texas and Wyoming.\textsuperscript{119} The Penn State Cooperative Extension conducted a study of 200 private water wells in 2007 and found that 8% of such wells have experienced mild to severe impacts from natural gas drilling.\textsuperscript{120} The study explains that this figure could be an overestimate due to stricter regulations in the 1980s or an underestimate due to the high volume of waste produced in hydraulic fracturing.\textsuperscript{121} “The bottom line is that nobody can state with confidence what the probability is that a gas well will contaminate freshwater supplies.”\textsuperscript{122}

Specific examples of groundwater contamination include the following:

1. Wyoming

\textsuperscript{115} SOEDER, supra note 1, at 4.
\textsuperscript{116} Id.
\textsuperscript{117} Sarah Crean, City Wants Answers, Input on Upstate Drill Plan, CITY LIMITS, Sept. 21, 2009, http://www.citylimits.org/content/articles/viewarticle.cfm?article_id=3805.
\textsuperscript{118} Id.
\textsuperscript{119} Crean, supra note 117 (quoting the Stringer report).
\textsuperscript{120} PENNINGROTH, supra note 111, at 2.
\textsuperscript{121} Id.
\textsuperscript{122} Id.
“The federal Environmental Protection Agency has found evidence of caustic chemicals associated with natural gas production in 11 private water supplies in the state of Wyoming.”

In Pavillion, Wyoming residents smelled foul water, and the EPA began an investigation in March 2009. Residents offer other stories linked to the contaminated water including blinded animals, oil slicks on well water, and nervous system disorders. The Agency recommends further testing to determine the source of high levels of arsenic, methane, 2-butoxyethanol, and other chemicals associated with gas drilling. Due to the lack of industry in the area, the drilling is a primary suspect. That being said, no confirmed example in the U.S. has yet scientifically linked fracturing fluids to groundwater contamination.

In 2006, a gas well blew out in Clark, Wyoming, resulting in a 10 million cubic foot plume of contamination—the equivalent of 100 Olympic-sized swimming pools. “The plume has contaminated drinking water aquifers, two private water wells and natural springs with benzene, diesel range organics, and an extensive list of toxic chemicals. The plume is also putting more than 20 downstream drinking water wells at risk.”

2. Pennsylvania

124 Wilber, supra note 123, at 2.
125 Lustgarten, supra note 123.
126 Wilber, supra note 123, at 2.
127 Id. See also Lustgarten, supra note 123 (explaining that the EPA is also considering other culprits such as (1) agricultural activity, although no pesticides were found with the contamination and (2) household cleaners washed down sinks, although such cleaners would have had to migrate not only to wells but also to the aquifer, which is considered unlikely).
128 Lustgarten, supra note 123.
130 Id.
Dangerous levels of methane have been found in private water wells near drilling sites in Dimock, Pennsylvania—up to fifteen square miles from the site in one case and in at least seven Pennsylvania counties since 2004.\textsuperscript{131} The state hired a full-time inspector just to monitor methane in homeowners’ wells.\textsuperscript{132} Methane is not toxic but can cause violent explosions.\textsuperscript{133} In addition, “[w]hen methane is found in water supplies, it can also signal that deeply drilled gas wells are linked with drinking water systems.”\textsuperscript{134} The regional Pennsylvania Department of Environmental Protection (PADEP) oil and gas manager initially described the situation in Dimock as an anomaly; however, similar problems have occurred in Bradford, Pennsylvania, where PADEP found methane and metals in wells and required the drilling contractor to install water treatment systems at homes with contamination.\textsuperscript{135} The methane leaks appear to have been due to nonexistent or poor casing and cementing around the well pipe.\textsuperscript{136} Other instances of “methane migration” in Pennsylvania include the following:

1. Bridgeville - two homes exploded due to methane seepage from a well casing failure;
2. Dayton - residents evacuated after a well casing failure;
3. Vandergrift - pressure from new drilling forced gas into abandoned adjacent wells, which percolated to the surface around homes in a heavily populated neighborhood; and
4. Jefferson County - gas collected in a home until it exploded, killing the residents and shooting debris across the road and into trees.\textsuperscript{137}

\textsuperscript{132} Id.
\textsuperscript{133} Wilber, supra note 123, at 3.
\textsuperscript{134} Lustgarten, supra note 131.
\textsuperscript{135} Id.
\textsuperscript{136} Id.
\textsuperscript{137} Id.
3. Ohio

On December 15, 2007, a family’s house exploded in Bainbridge, Ohio due to methane build-up through a private water well. Nineteen other homes were subsequently evacuated due to high methane levels.138 The state Division of Mineral Resources Management determined the source of the contamination to be natural gas drilling in the region’s Clinton sandstone, a formation of inter-bedded sandstones, siltstones, and shales.139 The specific causes of the gas invasion included inadequate cementing of the production casing, hydrofracking with minimal cement behind the production casing, and shutting in of the annular space between the surface and production casings.140

2. Surface Water Contamination

Contaminated surfaces at the drill site can also lead to pollution in surrounding water bodies through runoff after a rainstorm.141 In September 2009, aquatic life—including two species under federal endangered species protection—began to rapidly die off in Dunkard Creek, one of the most ecologically diverse streams in Pennsylvania and West Virginia.142 Eighteen species of fish and sixteen species of freshwater mussels have been wiped out, although the cause is still unclear.143 State and federal investigators initially looked to a mine water treatment facility but are considering nearby Marcellus Shale drilling after finding “extremely high total dissolved solids, or TDS, and chlorides—properties found in wastewater from . . . drilling

139 Id. at 4.
140 Id. at 5.
141 CRS Report, supra note 103, at 28.
143 Id.
operations but not mine water.” As of mid-October 2009, PADEP believed that the underground flow of methane gas well drilling water into a mine was “the primary immediate source” of the fish kill. Improper disposal of wastewater led to elevated TDS levels that exceeded the federal safe drinking water standards in the Monongahela River, which is fed by Dunkard Creek, in 2008 and 2009. Elevated TDS levels affect the taste and odor of water but are not considered to be a significant health risk. Nonetheless, PADEP has instructed sewage treatment plants to only accept gas well drilling wastewater as one percent of their daily flow, a reduction of ninety to ninety-five percent.

In addition, Bradford County is seeing such an overwhelming amount of development that companies are starting to clear, develop well pads, and drill in flood plains. These are regulated by municipalities, which often do not have the knowledge and expertise to be able to properly guide drilling companies on best management practices. Some companies have experienced flooding with severe rain events such that their storage pits, often filled with drilling flowback fluid, overflow and seep onto the land and into surrounding water bodies.

3. General Careless Operating Procedures

“[T]here are risks associated with . . . accidents every step of the way, from leaky pumps and seals, to faulty well casings.” For example, PADEP issued a cease and desist order on

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144 Id.
146 Hopey, supra note 142.
148 Id.
149 See Lovegreen, supra note 18.
150 Wilber, supra note 123, at 3.
July 10, 2009 to U.S. Energy Development Corporation because the company amassed 302 violations over two years.\(^{151}\) “The violations include failure to implement measures to prevent accelerated erosion, unpermitted discharges, failure to restore well sites, encroachments into streams and wetlands without obtaining required permits, and failure to plug abandoned wells.”\(^{152}\) In August 2009, Exxon-Mobil pled guilty to violating the federal Migratory Bird Treaty Act (MBTA) in five states during the past five years.\(^{153}\) “About 85 protected birds . . . died after exposure to hydrocarbons in uncovered natural gas well reserve pits and waste water storage facilities at Exxon-Mobil sites in Colorado, Wyoming, Kansas, Oklahoma and Texas.”\(^{154}\)

EARTHWORKS, a non-profit organization based in Washington, D.C., has catalogued numerous complaints of health problems associated with coalbed methane drilling in Colorado.\(^{155}\) An organizer for the Clark Resource Council in Clark, Wyoming has complained that “[w]e’ve had years of leaking waste pits, illegal dumping of drilling fluids, inadequate engineering, and finally, the blow out, which left us with contaminated drinking water aquifers. Windsor said the contamination plume wouldn’t move into private water wells or jump the Creek, and it did both. Now we fear that Windsor will join their predecessors by bankrupting and simply walk away from their mess.”\(^{156}\)

Specific examples of problems associated with shale drilling in other parts of the country include the following:

\(^{152}\) \textit{Id.}
\(^{154}\) \textit{Id.}
\(^{156}\) EARTHWORKS, \textit{supra} note 129.
1. Dimock, Pennsylvania

On Wednesday, September 16, 2009, between six and eight thousand gallons of lubricating fluid used to decrease resistance in the drilling process leaked from a pipe at a drilling site in Dimock, Pennsylvania in two episodes. The spills consisted of fluid that, according to the material safety data sheet, can cause “headache, dizziness, or other central nervous system effects” in addition to “respiratory irritation . . . chemical pneumonia . . . slurred speech, giddiness and unconsciousness” when inhaled. The release impacted a wetland area and Stevens Creek, a tributary of the Susquehanna River. The company, Cabot Oil & Gas Corp., reported a third spill on Tuesday, September 22, 2009.

Since 2008, Dimock has seen at least two other spills requiring cleanup; one involved 800 gallons of diesel fuel spilled by operators that threatened a nearby stream, and the other involved an undetermined amount of diesel released when a cement truck slid down a hill. In addition, PADEP has deactivated four wells and has required testing at over a dozen wells due to high levels of methane and a risk of explosions. The drilling company has installed systems in homes to remove natural gas or drilling-related contamination from water.

On September 25, 2009, PADEP ordered Cabot to halt operations in Susquehanna County out of concern for the company’s drilling processes and the region’s environment. PADEP allowed Cabot to resume drilling on October 16, 2009 after reviewing

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159 Id.
160 Id.
161 Wilber, supra note 157.
162 Id.
163 Id.
164 George Basler, PA Orders Shutdown of Cabot Drilling, BINGHAMTON PRESS & SUN-BULLETIN, Sept. 25, 2009,
the company’s plans to limit future problems and respond to emergencies.\textsuperscript{165}

2. Coos County, Oregon

US District Judge Michael Hogan issued an order in early 2009 directing MasTec Inc., a contractor hired to build a 60-mile long natural gas pipeline, to pay $1.5 million in penalties because of damage caused to streams and rivers, including “fill[ing] streambeds with drilling spoils.”\textsuperscript{166} Residents and environmental groups also faulted the Oregon Department of Environmental Quality for not adequately overseeing and inspecting the project.\textsuperscript{167}

3. Lebanon, New York

On March 18, 2009 a gas well exploded in Lebanon, New York,\textsuperscript{168} the second explosion after the January 1 explosion in Smyrna, New York.\textsuperscript{169} Something ignited the gas when workers were pulling out pipe after drilling at the site.\textsuperscript{170} The flames and black smoke were visible for two miles, and the well area burned for ten hours.\textsuperscript{171} There was no need for evacuation of residents in the area.\textsuperscript{172}

\textbf{III. Deficiencies in the Applicable Legal Landscape}

\begin{footnotesize}
\begin{enumerate}
\item[167] Id.
\item[170] Gifford, \textit{supra} note 168.
\item[171] Id.
\item[172] Id.
\end{enumerate}
\end{footnotesize}
A. Exemptions from federal statutes

1. Clean Water Act (CWA)

The Clean Water Act regulates water pollution and requires all facilities that discharge pollutants from any point source into surface waters to obtain National Pollutant Discharge Elimination System (NPDES) permits. Prior to the Federal Energy Policy Act of 2005 (2005 Energy Act), section 402(l)(2) of the Clean Water Act exempted “gas exploration, production, processing or treatment operations, or transmission facilities” from the NPDES permit requirement, as long as the stormwater discharges were uncontaminated. The requirement for uncontaminated discharges was codified in 40 C.F.R. § 122.26(c)(1)(iii), which said that the discharges must not contribute to a violation of a water quality standard. Section 503(24) of the CWA defined the quoted phrase above as “all field activities or operations associated with exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment.” Section 323 of the 2005 Energy Act amended section 503(24) of the CWA to include construction as an associated activity or operation. While not changing the statutory language in section 402(l)(2) of the CWA, the 2005 Energy Act influenced the section’s interpretation.

On June 12, 2006, EPA published a final rule to address the new provisions in the 2005 Energy Act. The rule attempted to clarify 40 C.F.R. § 122.26(c)(1)(iii) by saying that a “water quality standard violation for sediment alone does not trigger a permitting requirement.” The Natural Resources Defense Council sued EPA, claiming that the rule went beyond the mandates

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of section 402(l)(2) of the CWA and the 2005 Energy Policy Act amendments—essentially that sediment still could constitute contamination and a violation of a water quality standard. On May 23, 2008, the U.S. Court of Appeals for the Ninth Circuit held that EPA’s rule was unlawful. On November 3, 2008, the Ninth Circuit denied EPA’s petition for a rehearing and vacated EPA’s rule. As a result, the effective requirements are the regulations in place prior to EPA’s 2006 rule as well as the 2005 Energy Act exemptions.

In addition, Act’s definition of “pollutant” does not include hydrofracking fluids or produced water (the contaminated fluids that come up with the gas) when re-used for stimulation or re-injected for disposal, if approved by the state in which the well is located.\(^{174}\)

2. Safe Drinking Water Act (SDWA)

The Safe Drinking Water Act generally requires EPA to set drinking water quality standards. The Act also contains provisions for the federal Underground Injection Control (UIC) program, which requires federal permits for subsurface injection of wastes that could harm drinking water supplies. The Act requires that EPA regulate “contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons.”\(^{175}\) In 1997, the Legal Environmental Assistance Foundation, Inc. (LEAF) sued the EPA requesting the withdrawal of Alabama’s UIC program because it did not regulate hydrofracking.\(^{176}\) The court ruled for LEAF. EPA did enter into a memorandum of agreement with the three major U.S. fracking operations stipulating that the companies had thirty days to halt use of diesel fuel.\(^{177}\)

\(^{175}\) Safe Drinking Water Act §300(f)(1)(B).
\(^{177}\) See id. at 620–21.
Nonetheless, companies have acknowledged that they continue to use diesel.\textsuperscript{178} In addition, instead of complying with the full mandate of the court order, EPA conducted a study from 2000–2004, determining that the injection of hydrofracking fluids through coalbed methane drilling “poses little or no threat to [underground sources of drinking water] and does not justify additional study at this time.”\textsuperscript{179} There were many complaints with the research and the outcome of EPA’s study.\textsuperscript{180} For example, an EPA whistleblower, Weston Wilson, found that five of the seven members on EPA’s peer review panel for the study had potential biases; one member was a BP Amoco engineer, one was a Halliburton technical advisor, and one was a Gas Technology Institute engineer.\textsuperscript{181} The 2005 Energy Act overshadowed these concerns at the time. Section 322 of the Act amended SWDA to exempt hydraulic fracturing from the definition of underground injection. This exemption has been termed the “Halliburton Loophole” because Halliburton patented the hydrofracturing process. Therefore, the act of hydrofracking is exempted from the UIC program because it is not considered to involve waste storage. However, the underground storage of flowback fracking fluid is not exempted and is still subject to federal UIC regulatory controls.

The SDWA also requires lower fines for violations involving injection of production water—$5,000 per day versus $10,000 per day for all other types of parties.\textsuperscript{182}

The federal government has recently begun to address these exemptions. Both the House and the Senate have developed versions of the FRAC Act—the Fracturing Responsibility and

\textsuperscript{179} ENVIRONMENTAL PROTECTION AGENCY, STUDY TO EVALUATE THE IMPACTS TO USDWS BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS ES-1 (2004), http://www.epa.gov/OGWDW/uic/pdfs/cbmstudy_attach_uic_exec_summ.pdf.
\textsuperscript{180} See, e.g., Soraghan, supra note 178; Hannah Wiseman, Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation, 20 FORDHAM ENVTL. L. REV. 115 (2009).
\textsuperscript{181} See Wiseman, supra note 180, at 171.
\textsuperscript{182} See Safe Drinking Water Act, §300h-2(c).
Awareness of Chemicals Act of 2009 (H.R. 2766 or S. 1215). Among other things, this legislation would repeal the hydrofracking exemption to the UIC program. On June 9, 2009 the House version was referred to House Committee on Energy and Commerce and the Senate version was referred to the Committee on Environment and Public Works.183 On February 18, 2010, House Energy & Commerce Committee Chairman Henry A. Waxman and Subcommittee Chairman Edward Markey sent letters to eight companies that use hydraulic fracturing to obtain oil and gas inquiring about the types of chemicals used in the fracking process and the potential impacts and human health and the environment.184 In addition, Congress included a measure in the Interior and Environment Appropriations Bill for fiscal year 2010 that requires EPA to fund a scientific, peer-reviewed study of the relationship between hydraulic fracturing and drinking water.

3. Clean Air Act (CAA)

The Clean Air Act regulates air pollution and requires that EPA set emissions levels for hazardous air pollutants (HAPs) from both major sources and area sources.185 A major source includes “any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit . . . 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air

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185 See Clean Air Act §112(d).
pollutants.” An area source is any stationary source that is not a major source and that “presents a threat of adverse effects to human health or the environment (by such sources individually or in the aggregate).” [emphasis added] Nonetheless, the CAA exempts oil and gas wells and pipeline facilities from this aggregation capability, even when the units are close or commonly owned. This very well could exempt compressor stations, disposal tanks, or other facilities from major source status or minor source status, if the EPA administrator determines that the individual sources do not threaten human health or the environment.

4. Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act regulates disposal of solid and hazardous wastes. Congress initially exempted from RCRA’s hazardous waste provisions those wastes EPA considered “special” and lower in toxicity than other wastes being listed as hazardous. EPA later determined that oil and gas wastes were “special” and should remain outside of RCRA’s hazardous waste provisions. Now, over twenty years later, this section of the Act still does not regulate gas wastes such as “drilling fluids, produced water, hydrocarbons, hydraulic fracturing fluids, sludge from disposal pits, drilling muds, and sediment from the bottom of tanks.”

5. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

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186 CAA §112(a)(1).
187 See CAA §112(a)(2).
188 CAA §112(c)(3).
189 See CAA §112(n)(4).
190 See Mall, supra note 173, at 9–10.
192 Id.
193 Mall, supra note 173, at 23. See EPA, supra note 191, at 10–12 (listing exempt and non-exempt wastes).
The Comprehensive Environmental Response, Compensation, and Liability Act creates response and compensation requirements for managing releases or threats of releases of hazardous substances, which are defined more broadly than under RCRA. Congress also created Superfund, which covers the costs of CERCLA cleanups when responsible parties cannot pay or cannot be found. Taxes from the oil and gas industry and other major contributors to contaminated sites used to support Superfund, and in return for this contribution, CERCLA’s definition of hazardous waste exempts petroleum and natural gas. This exemption remains, even though the Superfund tax expired in 1995.

6. Emergency Planning and Community Right-to-Know Act (EPCRA)

The Emergency Planning and Community Right-to-Know Act was passed to encourage and facilitate emergency preparedness by requiring the release of information about potential chemical hazards present in communities. There are a variety of reporting provisions, one of which is the Toxics Release Inventory (TRI). EPCRA allows EPA to add or delete industries from regulation, and the agency has decided not to require information from the oil and gas industries in regards to exploration and production.

B. Preemption of home rule power

1. Environmental Conservation Law (ECL)

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195 See Mall, supra note 173, at 25.
196 See id. at 6.
Article IX of the New York State constitution articulates broad home rule powers for the state’s municipalities. Section 2(c) is particularly important here, as it establishes that “every local government shall have power to adopt and amend local laws not inconsistent with the provisions of this constitution or any general law relating to the following subjects,” including management of roads and other property and the protection of the health and safety of local citizens and property. Nonetheless, section 2(b)(2) allows the legislature to restrict this local power, which it did in passing ECL §23-0303(2). This section allows the state’s oil and gas law to supersede “all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries” with the exception of local jurisdiction over local roads or rights of local governments under the real property tax law.198 While this preemption language appears quite explicit, there are indications that courts will begin to take a close look at the language in ECL §23-0303(2) allowing state law to supersede local law relating to the regulation of the gas industry.199 Two New York cases and two very recent Pennsylvania cases provide some guidance as to how much the ECL can curtail home rule power to regulate natural gas drilling.

In 1987, the New York Court of Appeals considered preemption language for the extractive mining industry that looked much like that for the oil and gas industry.200 Despite the express preemption of local laws, the court upheld the town’s law prohibiting extractive mining entirely in certain zoning districts, reasoning that the ordinance “relates not to the extractive mining industry but to an entirely different subject matter and purpose: i.e., ‘regulating the location, construction and use of buildings, structures, and the use of land in the Town.’”201 The state legislature subsequently amended the ECL to allow municipalities to retain the right to

198 ECL §23-0303(2).
199 See Kenneally, supra note 197, at 3.
201 Id. at 131.
determine permissible uses within its zoning districts. In 1996, the New York Court of Appeals decided that the ECL did not preempt a town from excluding mining from all its zoning districts, “[s]o long as the exclusion is reasonable and is designed to protect the rights of residents and to promote the interests of the community as a whole.” New York courts have also said that local governments can require mining companies to obtain zoning permits before development and that special permits can be conditioned on a finding that the proposed mining operation is in harmony with the development and welfare of the surroundings. Courts have also upheld non-zoning, general land use regulations that only have an incidental effect on mining, such as timber harvesting ordinances. It is not clear whether or not New York courts will apply the same reasoning in the natural gas context. In the meantime, some municipalities are developing ordinances that aim to guide the scope of drilling and its associated impacts, such as water withdrawals and road use.

Pennsylvania courts have very recently decided home rule and preemption issues as they relate to natural gas drilling. The Pennsylvania Oil and Gas Act contains preemption language similar to that in New York’s ECL: “No ordinances or enactments adopted pursuant to the aforementioned acts shall contain provisions which impose conditions, requirements or limitations on the same features of oil and gas well operations regulated by this act.”

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202 See Kenneally, supra note 197, at 4.
206 See Schadow v. Wilson, 191 A.D.2d 53 (1993); Caffrey, supra note 204.
209 PA Oil and Gas Act, §602
court in *Huntley & Huntley v. Borough Council of Borough of Oakmont* ruled that the state Oil and Gas Act did not preempt municipalities from zoning out natural gas drilling operations because local governments have the power to determine the land uses in their jurisdictions. In contrast, the court in *Range Resources Appalachia, LLC v. Salem Township* determined that the Oil and Gas Act preempted a local ordinance that, among other things, “require[d] a permit for all drilling-related activities [and] regulate[d] the location, design, and construction of access roads, gas transmission lines, water treatment facilities, and well heads.” These cases seem to be consistent with the older mining cases from New York, but again, it is unclear how lenient New York courts will be with municipal ordinances that have any impact on natural gas drilling.

Although local municipalities may have little power to dictate gas drilling operations, their power to control gas companies’ use of local roads under Title 8 of New York State’s Vehicle and Traffic Law is important. As documented in Part II, gas companies will use local roads extensively for heavy drilling equipment and for numerous, around-the-clock truckloads of water, chemicals, diesel, and wastes coming from and going to well sites. The dSGEIS encourages local governments to be proactive in exercising their authority under Title 8. Such authority includes the ability to conduct a road system integrity study to potentially assess fees for maintenance and improvements. Supplementary permit conditions for high-volume hydraulic fracturing will require the site operator to submit to DEC, prior to site disturbance and for informational purposes only, a copy of a road use agreement between the operator and municipality. If there is no road use agreement, the operator must file a trucking plan with DEC, along with documentation of its efforts to reach a road use agreement. Sample provisions of a road use agreement or trucking plan include:

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• Route selection to maximize efficient driving and public safety,
• Avoidance of peak traffic hours, school bus hours, community events, and overnight quiet periods,
• Coordination with local emergency management agencies and highway departments,
• Upgrades and improvements to roads that will be traveled frequently for water transport to and from many different well sites,
• Advance public notice of any necessary detours or road/lane closures,
• Adequate off-road parking and delivery areas at the site to avoid lane/road blockage, and
• Use of rail or temporary pipelines where feasible to move water to and from well sites.\textsuperscript{212}

\textit{2. Public Service Law (PSL)}

Under the Public Service Law, municipalities are preempted from requiring “approval, consent, permit, certificate or other condition for the construction or operation of a major facility,” such as a transmission line, that has applied for a certificate per the PSL except where there is another applicable state law mandating that the municipality act to protect employees engaged in construction and operation of the line and the municipality has received notice that a construction application has been filed.\textsuperscript{213}

\textit{C. Scattered state laws}

Chapter 7 of the dSGEIS details the mitigation measures associated with the environmental impacts articulated in Chapter 6, and it includes proposed permit conditions as well as current requirements outside of the permitting process. Because the nature of the permits for horizontal drilling and hydraulic fracturing is unsettled at the time of writing, this section, Part III.C., focuses on the scattered nature of state law that guides drilling practices beyond those requirements articulated in permits.

\textsuperscript{212} dSGEIS, supra note 10 Section 7.11.
\textsuperscript{213} See N.Y. Pub. Serv. § 130.
There have been complaints from regulators and industry officials that New York’s laws are difficult to understand in a comprehensive matter, which can impede effective environmental protection as well as efficient gas development. For example, Jim Dezolt, the Director of DEC’s Division of Water, said in testimony before the New York Legislature that the State’s water regulations are “fragmented and incomplete,” and he recommended “a comprehensive water resource program that addresses both quantity and quality.”

Rex Tillerson, the CEO of Exxon, told Congress, “[A] look at the state regulations now in place shows just how limited and inconsistent the oversight is of a practice that some people fear could contaminate water supplies.”

An accounting of the applicable state laws mentioned in the dSGEIS reveals their disjointed nature. First, New York State has many regions that are considered environmentally sensitive, and additional or different laws apply to these areas, especially in the case of water quality and quantity. This is the case for the Great Lakes, the Susquehanna and Delaware Rivers, and the New York City watershed, all of which overlap in part with the Marcellus Shale. Second, because the SEQRA process is limited to DEC’s jurisdiction (or at least that is how it is being applied in this instance, with little emphasis on cumulative impacts), it does not fully take account of other agencies’ regulations that can influence environmental protection, such as the Departments of Agriculture and Markets, Health, and Transportation as well as the Public Service Commission.

The state laws that are primarily applicable are the Mineral Resources statute and implementing regulation, ECL §23 and 6 NYCRR 550–559. These sections include

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requirements for drilling permits, well spacing, well plugging, and operating practices. Beyond these mandates, however, it is unclear what guidance and protections state law provides. For example, the dSGEIS asserts that ECL §15-3301 applies to horizontal drilling and high-volume hydraulic fracturing such that any entity that withdraws, or that has the capacity to withdraw, groundwater or surface water over 100,000 gallons per day must file an annual report with DEC. It is questionable how well an annual report ensures environmental stability and regional planning in regards to water quality and quantity. The dSGEIS proposes many other reporting requirements. Depending on the circumstances, there are also a variety of permits that must be submitted in addition to the permit to drill; however, this information is not centralized, making compliance difficult. The dSGEIS mentions the need for additional permits when a company disturbs a protected stream or its banks, acts within 100 feet of a wetland, or produces polluted stormwater, for example. Many requirements are not even outlined in the ECL or implementing regulations but rather are contained in guidance documents, such as the Division of Water’s Technical and Operational Guidance Series (TOGS) or DEC’s policy documents “Assessing and Mitigating Noise Impacts” and “Assessing and Mitigating Visual Impacts.”

While the final SGEIS will help consolidate many of these disparate regulations, there will still be reporting and permitting requirements outside of that scope. It is true that drilling companies and their attorneys are responsible for determining with what state laws they must comply; however, considering the lack of federal and local oversight, the obstacles in bringing common law claims discussed below, and the potential for serious environmental impacts, the scattered nature of state laws only serves to hinder effective environmental protection and efficient gas development.

216 See dSGEIS, supra note 10, at 7-4.
217 See 6 NYCRR 608.2; ECL §24; Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (GP-0-06-002).
D. Difficult common law claims

There are many impediments to bringing a successful common law action against a drilling company for damage to the environment and public health. Common law suits in nuisance and trespass can resemble toxic torts suits, like the case in Dimock where fifteen residents sued Cabot Oil and Gas over drinking water contamination and resulting health impacts.218 Problems arise when you have “large numbers of plaintiffs, oftentimes in multiple locations, a heavy emphasis on causation (with a particular emphasis on issues of science), activities that have spanned many years, and the evidentiary issues (such as precise exposure measurements) inherently generated by such a span of time.”219 The main impediment to such suits seems to be proving causation: was there enough exposure to cause the alleged injury and did the toxin actually cause the injury.220 This is particularly difficult in the hydrofracking context; the contaminants might not be found for years and are hard to identify due to the general lack of information, at least on a local level, about what types of chemicals are in fracking fluid.221

Wiseman discusses how Coastal Oil and Gas Corp. v. Garza Energy Trust, a 2008 case from the Texas Supreme Court that said “damages from the drainage of natural gas from adjacent property through fracking [did] not constitute an actionable trespass claim,” is being cited by oil and gas companies in Pennsylvania and New York to counter trespass claims

220 See id. at 301.
221 See Wiseman, supra note 172, at 156.
surrounding noise complaints, for example.\textsuperscript{222} Wiseman published in early 2009 and determined that at the time, there were no state cases addressing claims for environmental damage caused by hydrofracking.\textsuperscript{223} Many such lawsuits are currently in the works, however. In addition to the Dimock suit, George Zimmermann has brought a claim of negligence against Atlas Energy, Inc. in the Washington County Court of Common Pleas in Pennsylvania.\textsuperscript{224} Zimmermann found chemicals considered potentially carcinogenic by the U.S. Environmental Protection Agency in test wells on his property, and he claims they could only have come from the drilling on his property, 1500 feet from his home.\textsuperscript{225} The major hurdle, as with other claims of drilling contamination, is proving the link between the drilling activities and the chemicals found in soil and water samples.\textsuperscript{226} Counsel for Atlas Energy claims they are in compliance with Pennsylvania drilling regulations and assert no wrongdoing.\textsuperscript{227} The Zimmermann suit highlights another hurdle to common law suits: paying for testing costs in order to try and prove causation.\textsuperscript{228} Recent suits in New York include a nuisance claim against Schlumberger Technology Corp. for adverse environmental impacts due to drilling as well as a nuisance case in the Western District of New York, \textit{Harnas v. Gas Field Specialists, Inc.}\textsuperscript{229}

It remains to be seen how successful these lawsuits in the Marcellus are, but they face many hurdles. When paired with the largely inapplicable federal statutes, the financial and legal difficulties in bringing common law cases leaves fracting regulation “wholly to state governments. . . . [I]f fracting has significant environmental and public health impacts, the lack

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\textsuperscript{222} Id. at 115–16.
\textsuperscript{223} See id. at 146.
\textsuperscript{225} See id.
\textsuperscript{227} See Hurdle, \textit{supra} note 224.
\textsuperscript{228} See id.
\textsuperscript{229} See Cassidy, \textit{supra} note 226.
\end{flushleft}
of regulation is problematic.}\textsuperscript{230} SEQRA is in place to address these serious impacts, but as described below, it has some shortcomings that might prevent it from operating effectively.

\textbf{IV. Resulting Reliance on SEQRA and the Impacts on Natural Gas Development}

Natural gas drilling in the Marcellus Shale raises conflicting concerns typical to siting any major power development: energy needs, state and local budget demands, road use, land conversion, water quality and quantity, and possibly agriculture disruption. As demonstrated above, these issues are all very serious—issues that New York has the ability to manage on the front end of development with the aid of actual experiences in Pennsylvania, West Virginia, Texas, and elsewhere. Nonetheless, weak federal and local laws and scattered state regulations provide little guidance, especially in an attempt to integrate environmental, energy, and economic concerns. We are primarily left with SEQRA to balance these issues. For reasons discussed below, SEQRA is providing neither adequate environmental protection nor adequate guidance to the gas drilling industry.

Some have argued that SEQRA itself is problematic, that it may address concerns specific to one project in a holistic manner but does not promote comprehensive planning,\textsuperscript{231} even when there is a generic EIS, and that the problems as applied are so pervasive that it draws into question the adequacy of SEQRA as a regulatory method. One example of reform, among many,\textsuperscript{232} is for a statewide Environmental Review Board that would review challenges to local SEQRA determinations.\textsuperscript{233} For the purpose of considering natural gas development in the

\begin{footnotesize}
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\item \textsuperscript{230} Wiseman, \textit{supra} note 172, at 116.
\item \textsuperscript{231} \textit{See The Historical Development of SEQRA}, 65 ALB. L. REV. 323, 325 (2001).
\item \textsuperscript{233} \textit{See Michael B. Gerrard And Monica Jahan Bose, Possible Ways to “Reform” SEQRA}, NEW YORK LAW
\end{itemize}
\end{footnotesize}
Marcellus Shale, it is not productive to advocate for scratching SEQRA. It is important, however, to consider how the law’s shortcomings, especially in light of the weak regulations at other levels, might be influencing the balance of environmental and economic considerations.

A. Why SEQRA is not providing adequate environmental protection

SEQRA’s adequate protection of environmental concerns depends on many factors. First, DEC must have the staff, time, and knowledge to develop a comprehensive SGEIS that adequately considers environmental impacts, bearing in mind that the SGEIS provides most of the regulatory guidance to industry. Second, the company/consultant preparing the EAF Addendum and any accessory forms must conduct a comprehensive and truthful evaluation of the impacts. Third, DEC must have the staff, time, and knowledge to adequately review each permit application with associated forms. Fourth, DEC must have the staff, time, and knowledge to adequately complete site inspections. Fifth, companies make improvements if DEC finds violations during inspections. Sixth, DEC must take quick action to assess reports of violations. Seventh, companies must resolve the problem after they are issued violations. Eighth, citizens must have meaningful access to the courts to provide a check on DEC’s decision-making. There are a variety of concerns surrounding all of these factors, which has led DEC require a site-specific EIS for any drilling in the New York City and Syracuse watersheds\(^\text{234}\) and has led some to call for a state-wide ban.\(^\text{235}\) Drilling in the Marcellus Shale provides an opportunity to consider not only the community and environmental impacts of natural gas extraction in the


region but also the regulatory framework in place to balance those impacts with economic need.

1. SGEIS

The first hurdle to ensuring adequate environmental protection during natural gas development is actually the Environmental Conservation Law, which declares it “to be in the public interest . . . to provide for the operation and development of oil and gas properties in such a manner that a greater ultimate recovery of oil and gas may be had.” This statement does recognize the immense value of New York’s expansive natural gas resources, a value that is put in high relief by the state’s budget problems; however, the statement seems to elevate the development of those resources above the well being of others. As U.S. Representative Michael Arcuri commented at a January 2010 meeting with elected officials and environmental organizations, “While natural gas may arguably be New York State’s second greatest natural resource, there is little doubt that water is our greatest natural resource.” As described earlier, concerns about the impact of drilling on water, especially drinking water, are deep and pervasive.

SEQRA aims to draw out and address such concerns as well as balance effective gas development with other health and environmental goals. Nonetheless, Michal Gerrard, an attorney long involved in SEQRA and New York State environmental matters, writes that the aim of SEQRA for full disclosure and citizen participation is countered by a reality of secrecy. He lists several realities of the SEQRA process that result in secrecy, with the one most applicable to drilling in the Marcellus being that agencies often rely on developers and their

236 ECL § 23-0301.
237 See Edith Honan, Chesapeake Says NY Could Drive Away Gas Drillers, REUTERS, Jan. 5, 2010, http://www.reuters.com/article/idUSN0541938620100105 (implying that the moratorium on drilling permits while DEC considers the draft SGEIS could drive industry elsewhere, further harming the state’s $3.2 billion budget deficit).
239 See id. at 280.
consultants who apply their “best professional judgment” when considering environmental impacts; this judgment is highly discretionary and “will tend to be made in one particular direction.” This is not meant to discount DEC’s 800-page dSGEIS and the immense amount of research within it, but it is meant to highlight the mindset with which DEC’s Division of Mineral Resources is approaching Marcellus drilling and the wide discretion it has in crafting the SGEIS.

2. Enforcement

Even an SGEIS written without bias and containing the utmost environmental protections will not succeed in accounting for operating error and poor management without detailed review of permit applications and subsequent comprehensive site inspections. The refrain has become quite familiar by now—DEC does not have enough staff to keep pace with the scale of development predicted in the Marcellus. A study conducted by students at Cornell Law School determined that the dSGEIS proposes 187 new tasks for DEC in regulating Marcellus drilling, from additional permit requirements to expanded site inspection procedures. The staffing shortages and resulting enforcement problems are likely the most real concern New York faces based on the experiences with natural gas drilling in other parts of the country. Amy Mall at the Natural Resources Defense Council reports that a driller from Ohio with over two decades of experience has personally observed drillers and state inspectors ignoring legal requirements, specifically by allowing for “inadequate well construction, lax pressure management, and improper drilling through aquifers.” Another comment to Mall’s blog indicates that decreased enforcement does not necessarily lead to a heightened assessment on the permit side of

240 Id. at 281–82.
241 See Wilbur, supra note 49.
environmental review; a representative from the Northeast Ohio Accountability Project wrote that the Ohio Department of Natural Resources registered over 900 instances of water contamination linked to drilling but only denied permits for environmental reasons in two cases.243

While DEC has said that such problems will not occur in New York,244 there is no indication SEQRA will serve to stop them, especially in light of the staffing shortages. Stuart Gruskin, New York’s Executive Deputy Commissioner for Environmental Conservation has said employees “may have to work a little harder.”245 The public employees union said this is not possible and has called for a delay on additional drilling.246 Indeed, even review of the 13,500 comments on the dSGEIS has been slowed due to staffing shortages.247 West Virginia provides a startling example of how rapid development can overwhelm enforcement: “For the state’s 17 inspectors to visit West Virginia’s 55,222 wells once a year, they would have to inspect nine wells a day, every day of the year—no weekends, no vacations.”248 Some negative environmental consequences of natural gas drilling in West Virginia are described above.

ProPublica, which studied the correlation between staffing levels and the expansion of gas drilling in 22 states, reports that New York is the only state that has recently cut its field and

243 See id.
244 See Tom Wilbur, Activist Challenges DEC Claim of Few Gas Drilling Problems, BINGHAMTON PRESS & SUN BULLETIN, Apr. 4, 2010, http://www.pressconnects.com/apps/pbcs.dll/article?AID=/201004042025/NEWS01/4040356 (citing the work of William T. Boria, a water resources specialist who says that the Chautauqua County Health Department has received over 140 complaints of pollution related to gas drilling in New York, and the response of DEC Commissioner Grannis that drilling-related problems are small compared to other causes).
246 See id.
248 Lustgarten, supra note 245.
office enforcement personnel—ten percent since 2003. Pair this figure with a 676 percent increase in new wells drilled each year, and it “makes New York one of the fastest-growing drilling states in the nation. Meanwhile, the state’s 16 field inspectors took only three more enforcement actions against drilling companies in 2008 than they did in 2003.” Staffing problems will also interfere with the State’s ability to take quick action to assess reports of violations and monitor companies’ resolution of those errors.

3. Citizen suits

Especially in light of the projected rapid growth and the perceived shortage of DEC enforcement personnel, it is very important that citizens have meaningful access to the courts. “If agencies are immune from court review, the likelihood of their complying with SEQRA will surely start to erode.” In addition, as shown earlier in this paper, citizens have very little legal recourse otherwise. Nonetheless, there are a variety of hurdles to such suits.

First, few organizations, let alone community groups, would have the resources to sue DEC over its SGEIS or review process. They must have time to conduct research, technical know-how to dissect investigation reports, the funds to hire experts, and the ability to wait for Freedom of Information Law (FOIL) responses of government documents. In addition, the law regarding the statute of limitations for SEQRA claims is currently unsettled; some precedent indicates that the timeframe in which a party can sue begins when the lead agency makes its

249 See id.
250 Id.
252 See Gerrard, supra note 238, at 283.
SEQRA determination, and other precedent indicates that the clock starts ticking when the lead agency makes its final determination on whether or not the project is approved overall. The advice to “sue early and often” requires savvy and well-funded plaintiffs. Gaining standing to challenge these determinations might also be difficult. The standard before the New York State Court of Appeals’ decision on October 27, 2009 in Save the Pine Bush v. Common Council of City of Albany was that the plaintiff suffered direct harm and an injury that is different from that of the public at large. This was a prohibitive standing requirement that restricted eligible plaintiffs to those that lived within close proximity to the development. The requirement articulated in Save the Pine Bush is more permissive, allowing “a person who can prove that he or she uses and enjoys a natural resource more than most other members of the public has standing under the State Environmental Quality Review Act (SEQRA) to challenge government actions that threaten that resource.”

Second, even if plaintiffs could get into court, they would be confronted with a standard of review that is very deferential to DEC. SEQRA’s protections seem mostly procedural with little attention by courts to the substance. DEC is supposed to take a “hard look” at areas of environmental concern and make a reasoned decision based on its expertise. As one attorney wrote, “[a] review of these cases [challenging an agency’s review], however, leaves one with the

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254 See id.


256 See id.


258 Weinberg, supra note 251, at 316 (“[A]s long as agencies follow SEQRA’s procedures, i.e., preparing environmental impact statements (EISs) and weighing alternatives and measures to mitigate harms, courts are reluctant to interfere with the actual determinations governments make.”).

impression that the ‘hard look’ test is one of ‘we’ll know it when we see it.’”\textsuperscript{260} Michael Gerrard has in fact analyzed court decisions on the adequacy of agencies’ SEQRA review and has compiled very insightful data. From 1981–2000, the New York Court of Appeals handled 44 SEQRA cases, and pro-environmental plaintiffs won eight, almost entirely in the 1980s.\textsuperscript{261} Of these 44 cases, nearly all were decided unanimously.\textsuperscript{262} Gerrard writes, “The impression one gets from these decisions is of a court that is enormously deferential to administrative decisions, as least when regulatory—as opposed to constitutional—questions are at stake.”\textsuperscript{263} Even in cases where project opponents present substantial data and expert opinions, courts frequently find that the lead agency has reached an informed decision based on all the relevant material and that the judiciary should not intervene.\textsuperscript{264} Gerrard sums up courts’ review of SEQRA determinations in one sentence: “If an agency identifies the relevant areas of concern, writes them up in moderate detail, takes action consistent with the write-up, and follows the procedures reasonably closely, the agency is highly likely to eventually win any SEQRA lawsuit brought against it.”\textsuperscript{265}

In summary, SEQRA remains a valuable tool for environmental protection, and in the instance of DEC’s SGEIS for horizontal drilling and high-volume hydraulic fracturing, it has been a useful process in eliciting public comment and debate as well as local and regional planning in some areas. Nonetheless, some weaknesses frequently found with SEQRA have surfaced in this case and could be particularly detrimental due to the projected scale and pace of natural gas development in the Marcellus. Time is on New York’s side, and with adequate, honest foresight, the state could use SEQRA to its fullest in order to help profit from natural gas

\begin{footnotesize}
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\item Id.
\item See Gerrard, supra note 238, at 367.
\item See id. at 368.
\item Id. at 369.
\item See id.
\item Id. at 380.
\end{enumerate}
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reserves without destroying other beneficial resources in the state.

**B. Why SEQRA is not providing adequate guidance to industry**

One argument that time is not on our side and that New York must move quickly to finalize the dSGEIS is that lease-holding landowners want their royalty payments and that natural gas companies will cancel leases without the ability to get drilling permits. Indeed, in late March 2010 Fortuna began offering its 20,000 leaseholders the chance to cancel their contracts at the renewal period.\(^{266}\) The company cited the length of New York’s environmental review and the sharp decrease in market price for natural gas as reasons for reconsidering its leases.\(^{267}\) Despite Fortuna’s frustrations and the sense articulated by Chemung County Executive Tom Santulli that “New York state is ‘always the most regulated and slowest’ to act of any state,”\(^{268}\) the numerous reasons articulated above provide a strong case for a reasoned and comprehensive analysis of natural gas drilling in New York. When the SEQRA process operates to its full capacity, it can provide well-considered regulations and consistent enforcement that will serve as clear guidance to industry, as well as insurance of environmental protection.

For example, Pennsylvania, which does not have regulations as complete as the permitting requirements proposed in the dSGEIS, is struggling to manage problems after the fact.\(^{269}\) After issuing the consent order to Cabot Oil & Gas Corp. in November 2009, DEP has since issued another order for Cabot to plug wells that caused contamination in Dimock and to provide drinking water supplies to affected homes, has suspended review of Cabot’s permit


\(^{267}\) See id.

\(^{268}\) Id.

applications for new drilling in the state, and has barred the company from drilling new wells in Dimock for one year.\textsuperscript{270} The situation in Pennsylvania and in other states with more lax and vague laws demonstrates how a strong, thorough SGEIS in New York can help industry operate efficiently. This is especially the case with drilling in the Marcellus because drilling companies and contractors often travel from Oklahoma and Texas; they may not be familiar with the laws in the Northeast or with our geology and hydrology. PADEP Secretary John Hanger said regarding the new consent order with Cabot said, “Oil and gas companies doing business in Pennsylvania will follow the environmental rules and regulations put in place to protect citizens and our natural resources or face aggressive action by this department;” Cabot is headquartered in Houston, Texas.\textsuperscript{271}

One of the biggest hindrances to efficient development can arise at the enforcement stage. Even if companies understand the applicable state laws, they may be tempted to cut corners if those laws are not fully and systematically enforced. In contrast, companies will save time second-guessing state agencies if they know all the laws and permit conditions will be enforced. Many drilling corporations do want to conduct safe and clean development so that they have the trust of the state and local communities and are not held up by enforcement actions. They are hurt when lax enforcement allows the proliferation of irresponsible companies that operate carelessly and tarnish the image of the industry overall. Cabot’s operations in Pennsylvania have been noticed around the world, according to Hanger, and are considered “a black eye for the gas industry, the DEP and the state.”\textsuperscript{272} An article about Environment Canada’s inadequate and

\begin{footnotes}
\item[270] See id.
\item[271] Id.
\end{footnotes}
inconsistent environmental enforcement describes the detriment to industry.273 “Consistent enforcement would foster a level playing field,” where as now, “[f]ailure to enforce penalizes companies for investing in environmental compliance.”274 Partially in response to these types of concerns, Chesapeake has made an effort to advertise its responsible practices, such as casing the wells five times for groundwater protection and storing fracking fluid in closed containers.275

There is a great local resource in New York’s Soil and Water Conservation Districts (SWCD). New York’s Soil and Water Conservation Districts Law authorizes county boards of supervisors to create SWCDs.276 These districts “work[] with landowners, land managers, local government agencies, and other local entities in addressing a broad spectrum of resource concerns: erosion control, flood prevention, water conservation and use, wetlands, ground water, water quality and quantity, non-point source pollution, forest land protection, wildlife, recreation, waste water management and community development.”277 In some instances, SWCDs organize to enhance regional management. The Upper Susquehanna Coalition (USC), for example, is composed of sixteen districts in New York and three in Pennsylvania.278 This group is already playing a substantial role in assisting drilling companies and community members regarding pipeline and well pad locations, permitting requirements, and erosion control plans, among others. USC is developing a white paper for the State Soil and Water Conservation Committee to formalize districts’ role in facilitating responsible natural gas development.279 District members have the knowledge, experience, and on-the-ground expertise to critique the feasibility

274 Id.
276 See Soil and Water Conservation Districts Law, §5.
279 See Soil and Water Conservation Districts Role in Natural Gas Development in New York State, Upper Susquehanna Coalition, Apr. 19, 2010 (draft on file with USC).
of DEC’s dSGEIS and to assist with enforcement to the benefit of the environment and to industry. With considerable staffing concerns at DEC, SWCDs could become integral parts of a successful SEQRA process. In addition, SWCDs facilitate the general comprehensive planning goal of SEQRA, as they have a profound understanding of the relationship between water, land conversion, and agricultural development and the specific local impacts of those developments as well as the access to local communities that could allow them to facilitate real change. Indeed, one of the goals of the Pattern for Progress initiative is to increase local and regional participation in planning and land use decisions.²⁸⁰

Conclusion

The controversy surrounding natural gas drilling in the Marcellus Shale provides an opportunity to consider the success of SEQRA in fulfilling the original goals of balancing economic and environmental interests and of instigating comprehensive, long-term land use planning. Many claim these aims still elude us.²⁸¹ Drilling in the Marcellus highlights these shortcomings, despite DEC’s efforts to address common environmental impacts through the generic impact statement; serious concerns remain about water quantity and quality, road conditions, the impacts of pipelines, waste disposal, and other community and environmental impacts. Nonetheless, with these frustrations comes an opportunity to revive the initial and noble intent of SEQRA. Issues of water use, energy needs, agricultural land uses, road maintenance, etc. do not respect boundaries when drilling is projected to be so quick and widespread. For the reasons articulated above, there is a great need for a comprehensive

²⁸⁰See SEQR DIALOG, supra note 20, at 12.
²⁸¹See, e.g., Paul Bray, The Historical Development of SEQRA, Roundtable Discussion, 65 ALB. L. REV. 323, 325 (2001) (“Some of us had intended SEQRA to be a transition to real comprehensive planning at the local, regional, and state level—guiding us into a planning regime. That has not happened.”).
approach that reconciles the financial opportunities drilling presents with the potential for environmental and public health problems. SEQRA will only be successful to this end and in facilitating efficient gas development if the SGEIS finalizing is not rushed, if enforcement capacity matches growth of gas wells, if local expertise is utilized throughout the SEQRA process, and if citizens have meaningful access to the courts.