

DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT (SGEIS)  
Horizontal Drilling Using High Volume Hydraulic Fracturing in the Marcellus Shale

BACKGROUND INFORMATION<sup>1</sup>

The draft SGEIS publicly released today is a Supplement to the 1992 Generic Environmental Impact Statement for the Oil, Gas, and Solution Mining Program (1992 GEIS). A generic environmental impact statement is designed to assess environmental impacts of separate actions having common or generic impacts.

The 1992 GEIS has and continues to work well as a means of addressing the environmental impacts of conventional drilling. New York currently has more than 13,000 active oil and gas wells, and as a result of its strict regulatory program and the provisions of the 1992 GEIS, there have been no significant environmental problems associated with conventional drilling. Gas drilling in New York is a mature and successful industry.

The proposed gas drilling in the Marcellus Shale is considered to be “unconventional” drilling. Although both horizontal drilling and hydraulic fracturing (using water under high pressure to cause fractures in shale) have been in use in New York and elsewhere for years, advances in technology now allow for horizontal drilling with high volume hydraulic fracturing.

This process uses large amounts of water – millions of gallons – per well, and as a result there are a series of potential environmental impacts that were not considered in the 1992 GEIS.

A large portion of the southern tier of New York State sits on top of the Marcellus shale formation, and gas drilling companies have expressed a keen interest in pursuing drilling opportunities in New York using the drilling methods that are the subject of the SGEIS. The potential drilling opportunities can serve to drive the upstate economy, create jobs, and will provide a desirable local source of cleaner energy. There are, however, significant potential environmental issues, and the purpose of the SGEIS is to identify those impacts and propose mitigation measures. Accordingly, Governor Paterson directed DEC to prepare a Supplement to the 1992 GEIS to address those impacts and ensure that this type of drilling would be safely conducted in New York State.

The SGEIS is a lengthy, comprehensive document. Each chapter is posted separately on the DEC website at <http://www.dec.ny.gov/energy/47544.html>, and includes separate tables of contents so that you can easily find the information you are interested in. For convenience, following is a brief description of each chapter.

- Chapter 1 is a very brief introduction.

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<sup>1</sup> This document is intended to informally provide background, is for informational purposes only, and is not to be considered part of the draft SGEIS. Any characterizations or summaries of the contents of the proposed SGEIS and related documents are for convenience only, and the reader is expressly directed to the documents themselves for their contents.

- Chapter 2 describes the proposed government action which is the subject of the Supplement – that is, the issuance by DEC of permits for horizontal drilling using high volume hydraulic fracturing in the Marcellus Shale. This chapter also reviews the environmental setting for the issuance of these permits.
- Chapter 3 describes the SEQRA review process, including how a generic environmental impact statement is used, the circumstances under which a site-specific environmental review will be required, and the terms of a proposed Addendum to the Environmental Assessment Form that must accompany all permit applications.
- Chapter 4 is dedicated to describing the underlying geology of the Marcellus shale formation, to provide the reader with a context for understanding the proposed drilling process. In addition to discussing the geological features, Chapter 4 includes a discussion of seismic risk.
- Chapter 5 is a comprehensive review of the proposed drilling process, from the initial building of access roads to the final plugging of wells after the wells are exhausted. Some of the items covered in the chapter include: the state’s well-spacing rules; a full description of drilling and casing the wellbore; the composition and use of “frac fluids” (including the chemical additives); water sources and consumption of water for high volume hydrofracking; flowback (waste water) recovery, handling, storage, and disposal; naturally occurring radiation; the production phase of the well; gas gathering and compression (including a description of Public Service Commission jurisdiction and the Article VII process); and a summary of what other states have done.
- Chapter 6 inventories the potential environmental impacts. Among other things, the impacts considered include: water consumption; stormwater runoff; ground water protection; fluid and solid waste transport and disposal; operating in floodplains; ecosystems and wildlife (including invasive species); freshwater wetlands; air quality; greenhouse gas emissions; naturally occurring radiation; visual impacts; noise; road use; community character; cumulative impacts; and seismicity. In addition, sections are dedicated to discussion of sensitive areas such as the New York City Watershed and primary and principle aquifers.
- Chapter 7 contains the proposed mitigation measures. For each of the impacts identified as significant in Chapter 6, mitigation measures are proposed in Chapter 7. The mitigation discussion also includes the applicability of River Basin Commissions and New York City Watershed rules. Chapter 7 also contains references to the Special Permit Conditions and Addendum to the Environmental Assessment Form discussed below.
- Chapter 8 describes the permitting process and the coordination between DEC and other agencies having jurisdiction (NYS Dept. of Health, NYS Dept. of Transportation, Office of Parks, Recreation and Historic Preservation, NYC Dept. of Environmental Protection, and the Susquehanna and Delaware River Basin Commissions). This chapter also addresses local government involvement in the process.

- Chapter 9 is the required alternatives analysis.

The draft SGEIS also includes a proposed Environmental Assessment Form (EAF) Addendum, and proposed Supplementary Permit Conditions for High-Volume Hydraulic Fracturing. The EAF is very important as it specifies the information that will be required before permits can be issued, and the permit conditions that will be used to ensure that appropriate mitigation requirements are implemented by the operators.

The ways in which the draft SGEIS addresses some of the issues that we have most frequently been asked about are summarized below.

### **Drinking Water**

Most questions we have received relate to concerns about drinking water, whether from residential wells, public water supplies or the New York City Watershed. People are generally worried about the ability of the state to protect surface and groundwater from the chemicals used in the hydraulic fracturing process. The draft SGEIS offers a range of mitigation measures designed to ensure that the state's long history of safe drilling continues:

- DEC will continue to require the exacting requirements for drilling, casing and cementing that protects aquifers from gas or fluids passing through the wellbore. These procedures have a proven track record in New York for thousands of wells, a large percentage of which have been drilled through drinking water aquifers. As the actual drilling phase of the process is not different for the proposed Marcellus Shale drilling, continuing these requirements will be fully protective of aquifers.
- Nonetheless, there will be even more rigorous procedures for sensitive areas. For example, DEC inspectors will be notified before drilling commences and will be on site to observe the cementing process when drilling takes place over primary or principle aquifers.
- It is generally acknowledged, and in the SGEIS we agree, that to the extent risks are presented to water supplies, it is not from the wellbore but rather from the possibility of surface spills. The potential for spills of fuels and fracking chemicals, including the flowback, will be mitigated through a number of measures, including:
  - setbacks from waterbodies and water supplies (distance reduces risk of contamination to water because of attenuation through soils and prescribed spill response);
  - a requirement that steel tanks be used for on-site flowback capture, creating a closed loop system for returned water from the well and the salt and chemicals it carries;
  - a new regimen to address the possible use of centralized flowback impoundments (which would allow for the reuse of flowback water among well pads) with a number of protective elements, such as:
    - a double liner system like those used for landfills;

- application of dam safety requirements;
- protective fencing and distances from public access; and
- measures to protect wildlife.
- additional special protections for sensitive areas, such as the NYC Watershed and floodplains, where, for example, no impoundments would be permitted;
- application of industrial stormwater permit requirements at all well sites; and
- baseline sampling of nearby water wells to allow for monitoring and for response and legal action in the event that groundwater becomes contaminated.

## **Fracking Fluids**

The fluids used in hydrofracturing contain small percentages of chemicals, which are disclosed and discussed in the draft SGEIS. As acknowledged by the State Department of Health, there is reason for concern whenever there is an opportunity for exposure of dangerous chemicals to humans or to the environment.

- The draft SGEIS requires that fracking fluids be contained and managed through closed loop systems and other protective measures.
- DEC will require disclosure, before a permit is issued, of all chemicals to be used at a given site, as well as the establishment of spill response protocols. This will assure that appropriate, chemical-specific action can be taken in the event of a spill, and that any contamination found in local surface or groundwater can be traced to well site use, if that is the source.
- Spent fluids will have to be removed from on-site tanks within 45 days (this time frame is reduced to 7 days for tanks in sensitive areas such as the NYC Watershed).
- The flowback must be conveyed by a DEC licensed industrial waste hauler, who is required, in turn, to take it to a treatment facility approved to accept and handle the waste.
- A new tracking system will be put in place to manage the disposal process and ensure that all flowback is properly accounted for. The draft SGEIS contains very detailed requirements for transporting chemicals, assessing a treatment facility's ability to handle flowback, and efforts to replace hazardous chemicals with "green" alternatives.

## **Water Withdrawals**

Many people have expressed concern about the massive amounts of water – millions of gallons – required to fracture a well, and how these withdrawals might affect water supplies, wildlife, wildlife habitat and stream flows.

- While most withdrawals will be from the Susquehanna and Delaware River Basins, each of which is protected by a Commission which has promulgated permitting rules designed to avoid these impacts, the draft SGEIS has adopted a more stringent test for water withdrawals, whether within or outside those basins. Known as the "Natural Flow Regime Method," the formula to be applied by any drilling operation is designed to recognize seasonal flow patterns and to assure adequate flow for the protection of the

downstream “best uses” of the stream. This would be in addition to water withdrawal approvals required by the SRBC and the DRBC.

### **Quality of Life**

The draft SGEIS acknowledges and catalogues the various impacts of gas drilling from a host community perspective. Unquestionably, drilling operations and trucking will be noisy and will last for months at a given well pad. The draft SGEIS discusses these impacts. The draft SGEIS also recognizes, however, that the proposed horizontal drilling allows for larger spacing units (640 acres or more compared to 40 acres for a single well) managed by a single multi-well pad, reducing the total amount of land disturbed for the pads and access roads, and the number of sources of noise and visual impacts. There will also be more options for optimal placement to avoid, where possible, viewsheds and nearby homes of non-leasing residents.

- Operators will be required to produce noise impact and visual impact reduction plans, and if an agreement is not reached with the local government for road use, trucking plans.
- The impacts of multi-well pads, while lasting longer than for single well operations, are temporary, with reclamation taking place 45 days after the last well on a pad is installed.

### **Non-Significant Impacts**

The draft SGEIS addresses all concerns raised in the 3000+ comments submitted in the scoping process. Some of these, upon scientific and technical analysis, are shown not to be significant, and, therefore, do not require mitigation. Thus, as examples, most (but not all) air impacts, seismic impacts and the threat of fluids or gas migrating through geologic formations were found to be insignificant. The draft SGEIS fully discusses these areas.