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Chapter 3 Proposed SEQRA Review Process

3.1 Introduction – Use of a Generic Environmental Impact Statement

The Department’s regulations to implement the State Environmental Quality Review Act (“SEQRA”), available at <http://www.dec.ny.gov/regs/4490.html>, authorize the use of generic environmental impact statements to assess the environmental impacts of separate actions having generic or common impacts. A generic environmental impact statement and its findings “set forth specific conditions or criteria under which future actions will be undertaken or approved, including requirements for any subsequent SEQR compliance.”¹ When a final generic environmental impact statement has been filed, “no further SEQR compliance is required if a subsequent proposed action will be carried out in conformance with the conditions and thresholds established for such actions” in the generic environmental impact statement.²

3.1.1 1992 GEIS and Findings

Drilling and production of separate oil and gas wells, and other wells regulated under the Oil, Gas and Solution Mining Law (Article 23 of the Environmental Conservation Law) have common impacts. After a comprehensive review of all the potential environmental impacts of oil and gas drilling and production in New York, the Department found in 1992 that issuance of a

¹ 6 NYCRR 617.10(c)

² 6 NYCRR 617.10(d)(1)

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.³ See Appendix 2. The review was conducted in accordance with SEQRA and is memorialized in the 1988 Draft and 1992 Final GEIS on the Oil, Gas and Solution Mining Program, which are incorporated by reference into this Supplement.⁴ A separate finding was made that issuance of an oil and gas drilling permit for a surface location above an aquifer is also a non-significant action based on special freshwater aquifer drilling conditions implemented by the Department.

The Department further found in 1992 that issuance of a drilling permit for a location in a State Parkland, in an Agricultural District, or within 2,000 feet of a municipal water supply well, or for a location which requires other DEC permits, may be significant and requires a site-specific SEQRA determination. The only instance where issuance of an individual permit to drill an oil or gas well is always significant and always requires a Supplemental Environmental Impact Statement ("SEIS") is when the proposed location is within 1,000 feet of a municipal water supply well.

The Department also evaluated the action of leasing of state land for oil and gas development under SEQRA and found no significant environmental impact associated with that action.⁵ Lease clauses and the permitting process with its attendant environmental review mitigate any potential impacts that could result from a proposal to drill. See Appendix 3.

3.1.2 Need for a Supplemental GEIS

The SEQRA regulations require preparation of a supplement to a final generic environmental impact statement if a subsequent proposed action may have one or more significant adverse environmental impacts which were not addressed.⁶ The Department determined that some aspects of the current and anticipated application of horizontal drilling and high-volume hydraulic fracturing warranted further review in the context of a Supplemental Generic Environmental Impact Statement (SGEIS or Supplement). This determination was based

³http://www.dec.ny.gov/docs/materials_minerals_pdf/geisfindorig.pdf

⁴<http://www.dec.ny.gov/energy/45912.html>

⁵ Supplemental Findings Statement, April 19, 2003 (http://www.dec.ny.gov/docs/materials_minerals_pdf/geisfindsup.pdf)

⁶ 6 NYCRR 617.10(d)(4)

primarily upon three key factors: (1) required water volumes in excess of GEIS descriptions, (2) possible drilling in the New York City Watershed, in or near the Catskill Park, and near the federally designated Upper Delaware Scenic and Recreational River, and (3) longer duration of disturbance at multi-well drilling sites.

- 1) *Water Volumes*: The GEIS describes use of up to 80,000 gallons of water for a typical hydraulic fracturing operation. Multi-stage hydraulic fracturing of horizontal shale wells may require the use and management of millions of gallons of water for each well. This raised concerns about the volume of chemical additives present on a site, withdrawal of large amounts of water from surface water bodies, and the management and disposal of flowback water.
- 2) *Anticipated Drilling Locations*: While the GEIS does address drilling in drinking water watersheds, areas of rugged topography, unique habitats and other sensitive areas, oil and gas activity in the eastern third of the State was rare to non-existent at the time of publication. Although the 1992 Findings have statewide applicability, the SGEIS examines whether additional regulatory controls are needed in any of the new geographic areas of interest given the attributes and characteristics of those areas. For example, the GEIS does not address drilling in the vicinity of the New York City watershed infrastructure which exists in the prospective area for Marcellus Shale drilling.
- 3) *Multi-well pads*: Well operators previously suggested that as many as 16 horizontal wells could be drilled at a single well site, or pad. As stated in the following chapters, current information suggests that 6 to 10 wells per pad is the likely distribution. While this method will result in fewer disturbed surface locations, it will also result in a longer duration of disturbance at each drilling pad than if only one well were to be drilled there. ECL §23-0501(1)(b)(1)(vi) requires that all horizontal infill wells in a multi-well shale unit be drilled within three years of the date the first well in the unit commences drilling. The potential impacts of this type of multi-well project are not addressed in the GEIS.

3.2 Future SEQRA Compliance

The 1992 Findings Statement describes the well permit and attendant environmental review processes for individual oil and gas wells. Each application to drill a well is an individual project, and the size of the project is defined as the surface area affected by development. The Department, which has had exclusive statutory authority since 1981 to regulate oil and gas development activities, is lead agency for purposes of SEQRA compliance.

When application documents demonstrate conformance with the GEIS, SEQRA is satisfied and no Determination of Significance or Negative or Positive Declaration under SEQRA is required. In that event Staff files a record of consistency with the GEIS. For the permit issuance actions

identified in the Findings Statement as potentially significant, or other projects where circumstances exist that prevent a consistency determination, the Department's Full Environmental Assessment Form (EAF)⁷ is required and a site specific determination of significance is made. Examples since 1992 where this determination has been made include underground gas storage projects, well sites where special noise mitigation measures are required, well sites that disturb more than two and a half acres in designated Agricultural Districts, and geothermal wells drilled in proximity to New York City water tunnels. As stated above, wells closer than 2,000 feet to a municipal water supply well would also require further site-specific review, but none have been permitted since 1992.

Upon final approval and filing of this Supplemental Generic Environmental Statement, and subsequent issuance of Supplemental Findings, the following will result:

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

⁷http://www.dec.ny.gov/docs/permits_ej_operations_pdf/longeaf.pdf

- 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 following sections explain how this Supplement will be used, together with the previous GEIS, to satisfy SEQRA when high-volume hydraulic fracturing is proposed.

3.2.1 Review Parameters

In conducting SEQRA reviews, the Department will handle the topics of SGEIS applicability, individual project scope, project size and lead agency as follows.

3.2.1.1 SGEIS Applicability - Definition of High-Volume Hydraulic Fracturing

The GEIS describes 80,000 gallons as the volume of a typical water-gel fracturing job. High-volume hydraulic fracturing (or “slickwater fracturing”) of horizontal wells as described in this Supplement requires millions of gallons of water. Horizontal well fracturing is done in stages, using 300,000-600,000 gallons of water per stage (Chapter 5). Fracturing a vertical well by this method could be equivalent to a single stage of a horizontal job, and could therefore require 300,000 or more gallons of water.

Potential impacts directly related to water volume are associated with water withdrawals, the volume of chemicals present on the well pad for fracturing, the handling and disposition of flowback water, and road use by trucks to haul both fresh water and flowback water. Judgment of when these impacts become substantial enough to require all of the additional controls described in this Supplement is subjective. The Department proposes the following methodology, applicable to both vertical and horizontal wells that will be subjected to hydraulic fracturing:

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|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>≤ 80,000 gallons:</i> | Not considered high-volume; GEIS mitigation is sufficient. |
| <i>80,001 – 299,999 gallons:</i> | May be considered high-volume. The applicant must complete the portions of the EAF Addendum related to water source, fracture fluid makeup, distances, water wells and a fluid disposal plan. For a multi-well site, the applicant must also complete the portions related to air emissions (e.g., stack heights, particulate matter |

controls, etc.). The Department will determine, based on potential impacts, to what extent SGEIS mitigation measures are required to satisfy SEQRA.

≥ 300,000 gallons:

Always considered high-volume. All relevant procedures and mitigation measures set forth in this Supplement are required for the SGEIS and GEIS to satisfy SEQRA without a site-specific determination.

3.2.1.2 Project Scope

Each application to drill a well will continue to be considered as an individual project with respect to well drilling, construction, hydraulic fracturing (including additive use), and any aspects of water and materials management (source, containment and disposal) that vary between wells on a pad. Well permits will be individually issued and conditioned based on review of well-specific application materials. However, location screening for well pad setbacks and other required permits, review of access road location and construction, and the required stormwater permit coverage will be for the well pad based on submission of the first well permit application for the pad.

The only two cases where the project scope extends beyond the well pad and its access road are when the application documents propose surface water withdrawals or centralized flowback water surface impoundments that have not been previously approved by the Department. Such proposed withdrawals and impoundments will be considered part of the project scope for the first well permit application that indicates their use, and all well permit applications that propose their use will be considered incomplete until the Department has approved the withdrawal or the impoundment.

Chapter 3 of the GEIS and Section 1.5 of the Final Scope explain why gathering lines, compressor stations and pipelines are not within the scope of project review for well permit applications by the Department. Chapter 5 of this Supplement describes the facilities likely to be associated with a multi-well shale gas production site, and also provides details on the Public Service Commission's environmental review process for these facilities.

3.2.1.3 Size of Project

The size of the project will continue to be defined as the surface acreage affected by development, including the well pad, the access roads, and any other physical alteration necessary. The Department's well drilling and construction requirements, including the supplementary permit conditions proposed herein, preclude any subsurface impacts other than the permitted action to recover hydrocarbons. Most wells will be drilled on multi-well pads, described in Chapter 5 as likely to be between 4 and 5 acres in size, with pads larger than 5 acres possible, during the drilling and hydraulic fracturing stages of operations. Average production pad size, after reclamation, is likely to be between 1 and 3 acres. Access road acreage depends on the location, the length of the road and other factors. In general, each 150 feet of access road adds 1/10th of an acre to the total surface acreage disturbance.

Centralized flowback water surface impoundments, when included in the project scope, may be as large as five acres for the impoundment itself, plus the acreage necessary for the access road, work areas, and to restrict access.

Surface water withdrawal sites will generally consist of hydrants, meters, power facilities, a gravel pad for water truck access, and possibly one or more storage tanks. These sites would generally be expected to be rather small, less than an acre or two in size.

3.2.1.4 Lead Agency

In 1981, the Legislature gave exclusive authority to the Department to regulate the oil, gas and solution mining industries under ECL §23-0303(2). Thus, only the Department has jurisdiction to grant drilling permits for wells subject to Article 23, except within State Parklands. The criteria for lead agency specify that the lead agency should be the one that has the broadest governmental powers for investigation into the impacts and the greatest capability for the most thorough environmental assessment of the action. These criteria would support the Department as lead agency. However, if the proposed action falls under the jurisdiction of more than one agency, based, for example, on the need for a local floodplain development permit, the lead agency must be determined by agreement among the involved agencies. An involved agency has the obligation to ensure that the lead agency is aware of all issues of concern to the involved

agency. To the extent practicable, the Department will actively seek lead agency designation consistent with the general intent of Chapter 846 of the Laws of 1981.

3.2.2 EAF Addendum

The 1992 Findings authorized use of a shortened, program-specific environmental assessment form ("EAF"), which is required with every well drilling permit application.⁸ (See Appendices 2 and 5). The EAF and well drilling application form⁹ do not stand alone, but are supported by the four-volume GEIS, the applicant's well location plat, proposed site-specific drilling and well construction plans, Department staff's site visit, and GIS-based location screening, using the most current data available. Oil and gas staff consults and coordinates with staff in other Department programs when site review and the application documents indicate an environmental concern or potential need for another Department permit.

The Department has developed an EAF Addendum for gathering and compiling the information needed for two purposes: (1) to evaluate high-volume hydraulic fracturing projects in the context of this SGEIS and its Supplemental Findings Statement with respect to SEQRA, and (2) to identify the required site-specific mitigation measures. The EAF Addendum will be required as follows:

- 1) With the application to drill the first well on a pad proposed for high-volume hydraulic fracturing;
- 2) With the applications to drill subsequent wells on the pad for high-volume hydraulic fracturing if any of the information changes; and
- 3) Prior to high-volume re-fracturing of an existing well.

Categories of information required with the EAF addendum are summarized below, and Appendix 6 provides a full listing of the proposed EAF Addendum requirements.

3.2.2.1 Hydraulic Fracturing Information

Required information will include the minimum depth and elevation of the top of the fracture zone, estimated maximum depth and elevation of the bottom of potential fresh water,

⁸http://www.dec.ny.gov/docs/materials_minerals_pdf/eaf_dril.pdf

⁹http://www.dec.ny.gov/docs/materials_minerals_pdf/dril_req.pdf

identification of the proposed fracturing service company and additive products, the proposed volume of fracturing fluid and percent by weight of water, proppants and each additive.

3.2.2.2 Water Source Information

The operator will be required to identify the source of water used to be used for hydraulic fracturing, and provide information about any newly proposed surface water source that has not been previously approved by the Department as part of a well permit application. The proposed withdrawal location, information about the size of the upstream drainage area and available stream gauge data will be required to demonstrate the operator's compliance relative to stream flow and the narrative flow standard in 6 NYCRR 703.2.

3.2.2.3 Distances

Distances to the following resources or cultural features will be required, along with a topographic map of the area showing the well pad, well location, and scaled distances to the relevant resources and features.

- Surface location of proposed well to any known water well or domestic supply spring within 2,640 feet;
- Closest edge of well pad to:
 - Any water supply reservoir within 1,320 feet (includes reservoir stem and controlled lake in NYC Watershed),
 - Any perennial or intermittent stream, wetland, storm drain, lake or pond within 660 feet (includes watercourse in NYC Watershed),
 - Any occupied structures or places of assembly within 1,320 feet; and
- Capacity of rig fuel tank and distance to:
 - Any primary or principal aquifer, public or private water well, domestic-supply spring, reservoir, perennial or intermittent stream, storm drain, wetland, lake or pond within 500 feet of the planned tank location (include reservoir stem, controlled lake and watercourse in NYC Watershed).

3.2.2.4 Water Well Information

The EAF addendum for high-volume hydraulic fracturing will require evidence of diligent efforts by the well operator to determine the existence of public or private water wells and domestic-supply springs within half a mile (2,640 feet) of any proposed drilling location. The operator will be required to identify the wells and provide available information about their depth, completed interval and use. Use information will include whether the well is public or private, community or non-community and the type of facility or establishment if it is not a private residence. Information sources available to the operator include:

- direct contact with municipal officials,
- direct communication with property owners and tenants,
- communication with adjacent lessees,
- EPA's Safe Drinking Water Act Information System database, available at http://oaspub.epa.gov/enviro/sdw_form_v2.create_page?state_abbr=NY , and
- DEC's Water Well Information search wizard, available at <http://www.dec.ny.gov/cfm/EXTAPPS/WATERWELL/index.cfm?view=searchByCounty> .

Upon receipt of a well permit application, Department staff will compare the operator's well list to internally available information and notify the operator of any discrepancies or additional wells that are indicated within half a mile of the proposed well pad. The operator will be required to amend its EAF Addendum accordingly.

3.2.2.5 Fluid Disposal Plan

The Department's oil and gas regulations, specifically 6 NYCRR 554.1(c)(1), require a fluid disposal plan to be approved by the Department prior to well permit issuance for "any operation in which the probability exists that brine, salt water or other polluting fluids will be produced or obtained during drilling operations in sufficient quantities to be deleterious to the surrounding environment . . ." To fulfill this obligation, the EAF Addendum will require information about flowback water disposition, including:

- Planned transport off of well pad (truck or piping), and information about any proposed piping;

- Planned disposition (e.g., treatment facility, disposal well, reuse, centralized surface impoundment or centralized tank facility);
- Identification and permit numbers for any proposed treatment facility or disposal well located in New York; and
- Location and detailed construction and operational information for any proposed centralized flowback water surface impoundment located in New York.

3.2.2.6 Operational Information

Other required information about well pad operations will include:

- Information about the planned construction and capacity of the reserve pit;
- Information about the number and individual and total capacity of receiving tanks on the well pad for flowback water;
- Stack heights for: drilling rig and hydraulic fracturing engines, flowback vent/flare, glycol dehydrator. If proposed flowback vent/flare stack height is less than 30 feet, then documentation that previous drilling at the pad did not encounter H₂S is required;
- Description of planned public access restrictions, including physical barriers and distance to edge of well pad; and
- Description of other control measures planned to reduce particulate matter emissions during the hydraulic fracturing process.

3.2.2.7 Invasive Species Survey and Map

The Department will require that well operators submit, with the EAF Addendum, a comprehensive survey of the entire project site, documenting the presence and identity of any invasive plant species. As described in Chapter 7, this survey will establish a baseline measure of percent aerial coverage and, at a minimum, must include the plant species identified on the Interim List of Invasive Plant Species in New York State. A map (1:24,000) showing all occurrences of invasive species within the project site must be produced and included with the survey as part of the EAF Addendum.

3.2.2.8 Required Affirmations

The EAF Addendum will require operator affirmations to address the following:

- pass by flow for surface water withdrawals,
- review of local floodplain maps,
- review of local comprehensive, open space and/or agricultural plan or similar policy documents,
- residential water well sampling and monitoring,
- access road location,
- stormwater permit coverage,
- use of ultra-low sulfur fuel,
- preparation of site plans to address visual and noise impacts, invasive species mitigation and greenhouse gas emissions, and
- adherence to all well permit conditions.

3.2.3 Projects Requiring Site-Specific SEQRA Determinations

The Department proposes that site-specific environmental assessments and SEQRA determinations be required for the high-volume hydraulic fracturing projects listed below, regardless of the target formation, the number of wells drilled on the pad and whether the wells are vertical or horizontal.

- 1) Any proposed high-volume hydraulic fracturing where the top of the target fracture zone is shallower than 2,000 feet along the entire proposed length of the wellbore;
- 2) Any proposed high-volume hydraulic fracturing where the top of the target fracture zone at any point along the entire proposed length of the wellbore is less than 1,000 feet below the base of a known fresh water supply;
- 3) Any proposed centralized flowback water surface impoundment. Emphasis of the initial review will be on proposed additive chemistry relative to potential emissions of Hazardous Air Pollutants. Additional review of site topography, geology and hydrogeology will be required for any proposed centralized flowback water surface impoundment at the following locations:
 - a) within 1,000 feet of a reservoir;

- b) within 500 feet of a perennial or intermittent stream, wetland, storm drain, lake or pond, or within 300 feet of a public or private water well or domestic supply spring;
- 4) Any proposed well pad within 300 feet of a reservoir, reservoir stem or controlled lake;¹⁰
- 5) Any proposed well pad within 150 feet of a private water well, domestic-use spring, watercourse, perennial or intermittent stream, storm drain, lake or pond;¹¹
- 6) A proposed surface water withdrawal that is found not to be consistent with the Department's preferred passby flow methodology as described in Chapter 7; and
- 7) Any proposed well location determined by NYCDEP to be within 1,000 feet of subsurface water supply infrastructure.

In addition, the Department will continue to review applications in accordance with its 1992 finding that issuance of a permit to drill less than 1,000 feet from a municipal water supply well is considered "always significant" and requires a site-specific Supplemental Environmental Impact Statement (SEIS) dealing with groundwater hydrology, potential impacts and mitigation measures. Any proposed well location between 1,000 and 2,000 feet from a municipal water supply well requires a site-specific assessment and SEQRA determination, and may require a site-specific SEIS. The GEIS provides the discretion to apply the same process to other public water supply wells. The Department will continue to exercise its discretion regarding applicability to other public supply wells (i.e., community and non-community water supply system wells) when information is available.

The Department is not proposing to alter its 1992 Findings that proposed disposal wells require individual site-specific review or that proposed disturbances larger than 2.5 acres in designated Agricultural Districts require a site-specific SEQRA determination. Likewise, proposed projects that require other Department permits will continue to require site-specific SEQRA determinations regarding the activities covered by those permits. No site-specific determination

¹⁰ The terms "reservoir stem" and "controlled lake" as used here are only applicable in the New York City Watershed, as defined by NYC's Watershed rules and regulations. See Section 2.4.4.3.

¹¹ The term "watercourse" as used here is only applicable in the New York City Watershed, as defined by NYC's Watershed rules and regulations. See Section 2.4.4.3.

is necessary when coverage under a general stormwater permit is required, as the Department issues its general permits pursuant to a separate process.