



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

January 11, 2012

Dear Sir or Madam:

Riverkeeper, Inc. (Riverkeeper) submits these additional, New York City (NYC) Watershed-specific comments to the New York State Department of Environmental Conservation (NYSDEC) on the Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program (RDSGEIS) and draft high-volume hydraulic fracturing (HVHF) regulations.

Riverkeeper is a member-supported watchdog organization whose mission includes safeguarding the environmental, recreational and commercial integrity of the Watershed that provides drinking water to nine million NYC and Hudson Valley residents. Riverkeeper is actively involved in advocacy and public education surrounding the issue of shale gas extraction via HVHF (also referred to as fracking), in particular because of its potential impacts on New York's drinking water supply.

Riverkeeper, the Natural Resources Defense Council (NRDC), Earthjustice, Inc. (Earthjustice), Catskill Mountainkeeper, and Delaware Riverkeeper Network have submitted over 500 pages of joint technical comments prepared by a team of leading national environmental review and scientific experts (Louis Berger Group, Inc., Harvey Consulting, LLC, Dr. Tom Myers, Dr. Glenn Miller, Dr. Ralph Seiler, Dr. Susan Christopherson, Meliora Environmental Design, Kevin Heatley, Dr. Kim Knowlton, Dr. Gina Solomon, and Briana Mordick) under separate cover. We are also submitting separately detailed legal and policy comments prepared jointly by the above organizations. Both of these joint comment letters are incorporated herein by reference.

After extensive evaluation and technical review, we have concluded that, for the issues identified below and in our joint comments, the RDSGEIS and draft HVHF regulations are so fundamentally flawed that NYSDEC must revise significant portions of the RDSGEIS and draft regulations and make them available for further public comment. Although our joint summary of flaws is more detailed and comprehensive than our discussion below, we submit these additional comments to underscore why we believe that NYSDEC failed to adequately analyze the potential impacts of HVHF gas development on the NYC Watershed in the RDSGEIS, and as a consequence, has not proposed sufficient protections for the Watershed in either the RDSGEIS or the draft HVHF regulations.

The Catskill/Delaware portions of the NYC Watershed provide pristine drinking water to nine million New Yorkers – almost half the state’s population. This Watershed is one of only five urban systems in America for which the U.S. Environmental Protection Agency (EPA) has granted a filtration avoidance determination (FAD) under the Safe Drinking Water Act because of its high quality source water.<sup>1</sup> When drinking water is obtained from surface waters (such as rivers), it is generally “filtered” to remove contaminants. Water obtained from the NYC Watershed is not filtered. Rather, the water is disinfected and distributed by a system of aqueducts, tunnels and pipes to citizens in NYC and upstate communities. Avoiding filtration both allows the City to maintain extraordinarily high quality water and saves NYC billions of dollars in capital expenditures and millions of dollars in operations and maintenance costs each year.

We have focused these comments on six fundamental flaws in the RDSGEIS and regulations that pose a major threat to the NYC Watershed, specifically NYSDEC’s failure to: (1) adequately assess the potential impacts of horizontal drilling and HVHF underneath the Watershed; (2) ban drilling in the Watershed involving less than 300,000 gallons of water; (3) fully protect Watershed infrastructure; (4) analyze wastewater issues related to the Watershed; (5) consider water withdrawal issues; and (6) evaluate impacts of gas pipelines and compressor stations in the Watershed. Although these comments address the NYC Watershed, they extend equally to the Syracuse Watershed.

***HVHF operations should be prohibited both on the surface of and underneath Watershed lands.***

The draft HVHF regulations ban “HVHF on the ground surface” within 4,000 feet of and including the NYC and Syracuse Watersheds.<sup>2</sup> However, horizontal well bores used in HVHF operations can reach over a mile (5,280 feet). NYSDEC’s proposed restriction therefore leaves the Watershed vulnerable to horizontal drilling underneath its surface.

As explained in detail in our joint technical comments, the RDSGEIS generally assumes that HVHF deep underground is safe because the geologic layers above the Marcellus shale will prevent contamination of aquifers.<sup>3</sup> However, the RDSGEIS fails to provide sufficient geologic information on these layers, and ignores the potential for existing faults and fractures to expedite contaminant transport. It also ignores studies that show that hydraulic fracturing has inadvertently fractured geologic layers as much as 1,500 feet above the target shale area, thereby providing pathways through the geologic layers and compromising the only mechanism that the RDSGEIS proposes will stop contaminant transport. The RDSGEIS further fails to assess the overall regional impacts of HVHF on the geological characteristics of the shale and the environmental implications, particularly for HVHF operations occurring near the watershed, of those impacts.

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<sup>1</sup> Riverkeeper is a signatory of the 1997 Watershed Memorandum of Agreement (“MOA”), which requires New York City to meet the requirements of the FAD and maintain the quality of its unfiltered drinking water. This FAD is currently undergoing mid-term review, a process in which Riverkeeper is actively involved.

<sup>2</sup> See 33 N.Y. State Reg. 39, at 17 (Sep. 28, 2011) (to be codified at 6. N.Y.C.R.R. § 750-3.3(b)(1)).

<sup>3</sup> For a full discussion of this issue, including references to studies, see the technical memorandum drafted by Dr. Tom Myers, appended as Attachment 2 to our joint technical comments.

Specific recommendations for addressing these gaps and deficiencies in the RDSGEIS, including mapping groundwater gradients, requiring seismic surveys of local faults prior to drilling, and groundwater monitoring, are set forth in our technical comments. Given the significance of the risk involved and the value of the NYC Watershed, Riverkeeper also strongly recommends that NYSDEC revise its regulations to ban all HVHF operations underneath Watershed lands. This added protection is particularly imperative because even a perceived risk of water contamination could lead the EPA to retract its filtration avoidance determination.

***Low-volume hydraulic fracturing should also be banned within the Watershed.***

Although the 2009 DSGEIS suggested that hydraulic fracturing using between 80,000 and 300,000 gallons of water “may be considered high-volume,”<sup>4</sup> NYSDEC excludes such wells from consideration under the RDSGEIS and its draft regulations. The RDSGEIS provides no justification for this change, which leaves the Watershed vulnerable to drilling involving less than 300,000 gallons of water without any additional environmental review. This is particularly concerning in light of the Economic Assessment Report appended to the RDSGEIS that assumes approximately 10% of the gas wells developed in the state may be vertical wells, which typically require less than 300,000 gallons of water.<sup>5</sup> Furthermore, as the City’s Department of Environmental Protection (DEP) noted in its RDSGEIS comments, the ban on HVHF in the Watershed could have the unintentional effect of incentivizing lower volume hydraulic fracturing in the area.<sup>6</sup> To ensure adequate protection of the Watershed, NYSDEC should ban all forms of gas drilling within and underneath the Watershed.

***NYSDEC should prohibit HVHF operations within seven miles of Watershed infrastructure.***

Much of NYC’s water supply infrastructure (the aqueducts, tunnels, and dams that deliver the water) is located west-of-the-Hudson, directly atop the Marcellus Shale, but falls outside of the boundaries of the City’s Watershed itself. It is therefore not protected by the RDSGEIS’ proposed Watershed surface drilling ban. Despite the well-known susceptibility of this aging and already leaking infrastructure, DEC has proposed virtually no protection. The RDSGEIS calls for only a site-specific review for any well pad proposed within a 1,000-foot wide corridor surrounding a water tunnel or aqueduct.<sup>7</sup> There are at least two major risks from drilling on or around water supply infrastructure, including tunnels, dams and aqueducts: (1) a threat that seismicity from drilling activities could jeopardize the stability of the tunnels themselves; and (2) a threat that fracking fluids or other contaminants could migrate from drilling sites into the tunnels via small cracks or fissures in the tunnel walls – potentially contaminating NYC’s drinking water.

DEP, which is responsible for this infrastructure, has previously called for a buffer of

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<sup>4</sup> 2009 DSGEIS at 3-5.

<sup>5</sup> Economic Assessment Report for the RDSGEIS, 4-3. This assumption is attributed to the Independent Oil and Gas Association of New York (IOGA-NY).

<sup>6</sup> Letter from Carter Strickland, Commissioner, DEP to Joseph Martens, Commissioner, DEC, Jan. 11, 2012, at 5, available at

[http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/nycdep\\_comments\\_on\\_rdsgeis\\_for\\_hvhf\\_20120111.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/nycdep_comments_on_rdsgeis_for_hvhf_20120111.pdf).

<sup>7</sup> RDSGEIS at 7-68.

seven miles to protect this water supply infrastructure, based on analysis by its own scientists and consultants. The fragility of this infrastructure is apparent from the fact that the water supply tunnels are already compromised; the Delaware Aqueduct has been leaking more than 30 million gallons of water per day (MGD) for more than two decades.

Allowing unsafe HVHF to occur near vulnerable critical water supply infrastructure is a completely unacceptable risk. DEP has stated that “it would take more than a decade for the City to design and build a filtration treatment facility that could protect against the contaminants of concern (if that were even feasible); during these many years, the public health, safety, and welfare of millions of New Yorkers would be at risk.”<sup>8</sup> Given the magnitude of the risk involved, NYSDEC should ban all HVHF operations on the surface of and underneath areas within seven-miles of the infrastructure both within and outside the Watershed. Failure to do so could lead the EPA to retract its FAD, which would force New York to attempt to install a filtration system at great cost to NYC ratepayers.

***NYSDEC should analyze and suggest mitigation measures for wastewater management and disposal.***

As discussed in more detail in our joint legal comments, the RDSGEIS does not adequately address wastewater management and disposal.<sup>9</sup> We raise this point here to note that the RDSGEIS and draft HVHF regulations do not ban wastewater transport or disposal in the watershed. The options that the RDSGEIS sets forth for possible treatment of HVHF wastewater include deep well injection and treatment in municipal or private facilities. Neither of these options are properly analyzed in the RDSGEIS, so the potential significant adverse impacts of each are therefore not examined, nor are possible mitigation measures identified.

Deep well injection is problematic due to the lack of permitted injection wells in New York and the distance the contaminated water would need to be hauled in order to dispose of it in other states where permitted wells exist. Without knowing the location where the waste is to be hauled, it is impossible to ascertain whether HVHF wastewater may be trucked in or near the watershed area. NYSDEC should fully analyze management and disposal options in the RDSGEIS, including the potential impacts of increased truck traffic across long distances and the potential for truck accidents and spills. In particular, the RDSGEIS should evaluate if this waste will be trucked in or near water supply areas, as accidents in those areas could be devastating.

As to the wastewater treatment option, New York currently does not have any municipal or private wastewater treatment plants equipped to treat wastewaters from HVHF operations, so any plant accepting such waste would have to undergo retrofitting and permitting to accept HVHF waste. The RDSGEIS makes no attempt to analyze what plants might undergo this retrofitting, or even have capacity to accept additional fracking waste, but does provide a list, in Appendix 21, of wastewater treatment plants in New York State that have industrial pre-

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<sup>8</sup> Letter from Carter Strickland, Commissioner, DEP to Joseph Martens, Commissioner, DEC, Jan. 11, 2012, at 3, available at

[http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/nycdep\\_comments\\_on\\_rdsgeis\\_for\\_hvfh\\_20120111.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/nycdep_comments_on_rdsgeis_for_hvfh_20120111.pdf).

<sup>9</sup> For a full discussion of this issue, see the technical memorandum drafted by Dr. Glenn Miller, appended as Attachment 3 to our joint technical comments.

treatment programs. Notably, Appendix 21 identifies three wastewater treatment plants within the NYC Watershed (Delhi, Hobart, Walton) and seven treatment plants (Port Jervis, Wallkill, Harriman, Newburgh, Poughkeepsie, Beacon, and Kingston) that, if retrofitted to accept wastes, could potentially require HVHF waste to be transported through the Watershed area.

Ultimately, the state has no idea how the toxic and radioactive wastewater generated will impact the Watershed, or the state generally. Under SEQRA, an EIS must consider the full range of environmental impacts associated with an action, including short term and long term impacts.<sup>10</sup> NYSDEC has not yet met that mandate, and has instead improperly segmented out of its review an analysis of the impacts that the management and disposal of millions of gallons of wastewater will have on both the Watershed and the state as a whole. NYSDEC must remedy this failure by fully analyzing those impacts and identifying appropriate mitigation measures.

***The RDSGEIS should analyze the potential impacts of pipelines in the Watershed.***

Pipeline and compressor station development is of particular concern because it is not banned within the NYC Watershed. The impacts of construction activities alone associated with building pipelines and facilities (such as stormwater runoff, habitat fragmentation, air pollution, and noise) may be significant and should be evaluated for the state as a whole, and in particular for the NYC Watersheds. This is another example of NYSDEC's improper segmentation of its environmental review, as NYSDEC failed to consider impacts of pipelines and compressor stations that will be needed if HVHF development goes forward.

The RSDGEIS does not analyze the potentially significant impacts of pipelines and compressor stations based on the flawed reasoning that such an analysis is not required because the pipelines would be reviewed under the Public Service Commission's Article VII process. The regulatory review process for pipelines is irrelevant to the environmental review required by SEQRA, which requires state and local agencies to consider all reasonably foreseeable long-term impacts of an action.<sup>11</sup> The draft HVHF SPDES General Permit is also flawed by its failure to address construction of pipelines or compressor facilities, and the corresponding stormwater pollution that will be associated with this development.

This omission also reflects NYSDEC's complete failure to adequately consider cumulative impacts, including the cumulative impacts of developing multiple well pads, pipelines, and compressor stations throughout the state, and in the Watershed, in violation of SEQRA.

***The RDSGEIS should analyze the potential threat to the NYC Watershed from water withdrawal for HVHF.***

The RDSGEIS estimates that HVHF will result in a "peak *annual* fresh water usage for high-volume hydraulic fracturing of 9 billion gallons," or over 24 MGD on average.<sup>12</sup> Although the RDSGEIS acknowledges the extensive comments NYSDEC received in 2009 regarding

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<sup>10</sup> E.C.L. § 8-0109(2).

<sup>11</sup> *Id.*

<sup>12</sup> RSDGEIS at 6-10 (emphasis in original).

potential degradation of NYC's surface drinking water supply, the RDSGEIS does not estimate the volume of water to be withdrawn from the NYC Watershed, nor does it consider the effects such withdrawal will have on the drinking water of over 9 million people.<sup>13</sup>

The RDSGEIS proposes, as the only mitigation measure, its draft water withdrawal regulations,<sup>14</sup> but these regulations are inadequate to protect the NYC Watershed. The water withdrawal regulations as proposed allow water withdrawal from the NYC Watershed for use in HVHF anywhere within or outside of New York State.<sup>15</sup> The regulations also allow water withdrawal from waterbodies outside of and downstream from the NYC Watershed. These withdrawals could require NYC, as a result of Delaware River Basin Compact obligations, to use NYC reservoir water to meet minimum flow requirements, thereby depleting NYC drinking water supplies. HVHF operators may withdraw 2 MGD from such sources without a permit until 2016,<sup>16</sup> and even this limit may be easily thwarted with multiple-owner tanker truck runs

NYSDEC improperly segmented its RDGEIS analysis by failing to address the likelihood and impacts of multi-million-gallon withdrawals for HVHF from both within and outside the NYC Watershed and the threat they pose to NYC's drinking water.<sup>17</sup> These impacts could include withdrawals that will reduce inflow to NYC reservoirs, reduce available supplies, and decrease the probability of refilling reservoirs prior to drawdown. During dry periods, these withdrawals could increase the amount of time spent under drought watch, warning, or emergency conditions. These withdrawals could also strain reservoirs that are required to release water to meet minimum flow requirements to protect downstream users, aquatic habitat and biota.<sup>18</sup> DEC should supplement its RDSGEIS to estimate the probable impacts on NYC's Watershed of the large water withdrawals that would be required for HVHF.

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Although we have not duplicated those comments here, as noted in our joint comments, Riverkeeper is also concerned that the mitigation measures, including buffers and setbacks, proposed for water supplies throughout the state, from primary and principle aquifers to private water wells, are grossly inadequate.

Governor Cuomo has promised that he will not allow fracking to move forward until he has the facts and the science that show it will be safe and a net benefit to New Yorkers. The RDSGEIS fails to give him the information he needs to keep that promise. For the reasons identified in our joint and individual comments, the RDSGEIS and draft HVHF regulations are so fundamentally flawed that NYSDEC must go back and revise significant sections and make them available for further public comment.

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<sup>13</sup> *Id.*

<sup>14</sup> RDSGEIS at 7-2 to -4; Water Withdrawal Permit, Reporting and Registration Program, 33 N.Y. State Reg. 47, at 8 (Nov. 23, 2011) (to be codified at 6 N.Y.C.R.R. § 601, 621).

<sup>15</sup> 33 N.Y. State Reg. 47, at 8 (Nov. 23, 2011) (to be codified at 6 N.Y.C.R.R. § 601, 621).

<sup>16</sup> 33 N.Y. State Reg. 47, at 8 (Nov. 23, 2011) (to be codified at 6 N.Y.C.R.R. § 601.7(b)(2)).

<sup>17</sup> N.Y. CITY DEP'T OF ENV'T'L PROT., FINAL IMPACT ASSESSMENT REPORT; IMPACT ASSESSMENT OF NATURAL GAS PRODUCTION IN THE NEW YORK CITY WATER SUPPLY WATERSHED 33-34 (2009).

<sup>18</sup> *Id.*

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Kate Hudson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kate Hudson  
Watershed Program Director  
Riverkeeper, Inc.