

Adirondack Mountain Club
Comments to the United States Environmental Protection Agency,

The Adirondack Mountain Club (ADK) thanks the United States Environmental Protection Agency (EPA) for the opportunity to submit written comments on its study of horizontal hydraulic fracturing. ADK is dedicated to conservation, education, outdoor recreation and protection of New York's Forest Preserve, parks, wild lands and waters. ADK represents over 30,000 hikers, paddlers, skiers and backpackers.

While ADK reveres the Adirondack and Catskill Mountain ranges for their grandness, there are many valuable State Parks, Wild life Management Area and State Forests in Central and Western New York that are extremely important to our members, especially our Western New York chapters. ADK will present our concerns for the potential environmental and recreational impacts that increased natural gas drilling in the Marcellus Shale may have on New York.

Before detailing our own concerns, ADK endorses the contents of the 63 pages of comments submitted by the City of New York on December 22, 2009 on the dSGEIS and the 90 pages of comments, analysis and conclusions of the Final Impact Assessment Report on Natural Gas Production in the New York City Watershed prepared by Hazen and Sawyer.

While ADK understands that Article XIV, section 1 of the state Constitution fully protects the lands of the Catskill Forest Preserve, we are deeply concerned about the impacts of high volume hydraulic fracturing for natural gas on the lands of the New York City watershed and the surrounding lands of the Catskill region. The Marcellus formation is thickest in this region and is a very likely target for the energy industry.

Hydraulic fracturing is even more inappropriate for Allegany State Park (ASP). This form of gas drilling is an intensive industrial activity which if allowed, would destroy the magnificent forests, pristine lakes and streams and ecological resources of the third largest state park in the nation. The Nature Conservancy has identified this park and much of Alleghany National Forest as a priority for conservation due to the unfragmented nature of these large swaths of old growth forests.

The need for federal regulation and oversight has become evident as drilling in Pennsylvania has contaminated streams in New York. This past summer, it was brought to our attention that Yagger Brook, located in ASP, was displaying high levels of turbidity in the water, as it appeared the same color and opaqueness as skim milk. Since that time, in cooperation with the Alleghany Defense Project we have been apprised of the weak oversight in Alleghany National Forest (ANF), and the frequent occurrences of improper waste water disposal, and illegal water withdrawals. We are confident that when a comprehensive look at the impacts to drinking water are considered, the EPA will find that hydraulic fracturing to be significant enough to trigger the Safe Drinking Water oversight.

Current drilling operations within ANF show a complete disregard for environmental regulations. As recently as August (2010) the Alleghany Defense project has documented several instances where drillers are illegally damming streams and poaching surface water to use for the drilling process. As a result, some of these creeks have almost ceased to exist. Through their investigation, they have also documented instances of unlined flowback pits, nonexistent or failed erosion and sedimentation controls, evidence of spills, leaking wellheads, illegal storage of drilling supplies, and roads that have been severely eroded.

Our National Forests have been preserved for generations. As stewards of these forests, it is the federal government's responsibility to perform due diligence in studying the impacts before compromising the future of thousands of acres of untouched forests. Drilling in these areas could diminish the value of these public lands which are currently managed for watershed protection, public recreation, wildlife habitat and open space conservation. The need for federal regulations and protection is especially crucial in circumstances such as the North Country National Scenic Trail. This trail runs through seven states, and traverses many New York State forests and Wildlife Management Areas that overlay the Marcellus Shale.

Even low volume hydraulic fracturing for gas production is an industrial activity with a number of potential environmental consequences. It requires cutting trees, clearing land, building roads and transportation of heavy equipment. It creates numerous opportunities for spillage of waste and pollutants and the contamination of surface and groundwater. It is noisy and dirty. Even with no environmental mishaps, each gas-well site will leave a sizable scar on the landscape that will take years to heal.

Development of hydraulic fracturing sites requires clear-cutting of forests to provide the five to seven acres necessary for every well pad. On each site there is wastewater storage, the building of pipelines, and storage of drilling equipment. Every hydraulic fracturing pad eliminates seven acres of forest. This study should include an evaluation of the cumulative impacts of forest fragmentation, habitat destruction, and wildlife disruption resulting from site construction. It also should analyze the impact of the conversion of permeable forest, cover or fields to gravel, or other low permeability compacted surfaces, and the resulting accelerated storm runoff and erosion potential due to reduced percolation and infiltration and the increased water flow velocities due to the clearing of trees and vegetative covering.¹

In these pristine areas, an untested technology should not jeopardize generations of conservation without a complete understanding of the impacts associated with this activity. Because these areas were originally preserved with the intention of protecting wildlife habitats, we should not commence an activity that could destroy the forest ability to serve as a refuge. In these areas the EPA should consider the impacts of forest fragmentation, along with increased turbidity in the water as a result of run off from the road building that must occur. ADK believes that the EPA should take a more comprehensive approach assessing the impacts in these pristine areas.

The federal government should practice due diligence in assessing the risks of this relatively new, and potentially disastrous method of natural gas extraction. ADK suggests, to ensure this protection, that a NEPA or in New York, a SEQR review must be conducted for each proposed

¹ Hazen and Sawyer Report, p. 32 .

well. A general environmental assessment form (EAF) is insufficient for companies with multiple proposed wells. Site specific oversight is necessary to guarantee the protection of New York's valuable surface and groundwater resources.

The original intent of preserving State and National Forest areas is to provide a natural experience to the public for recreation and scenic values. Outside of the numerous opportunities for contamination of the states valuable natural resources, the combination of sound and visual impacts are both strong arguments for why we should not allow hydraulic fracturing on state or federal owned lands used for habitat and watershed protection, or used for recreational purposes. The potential increase in man's industrial existence cannot be ignored, therefore, ADK believes the cumulative impacts of all processes and stages of natural gas drilling must be assessed and minimized.

ADK is encouraged by the EPA's full life cycle of water approach to understanding the impacts on drinking water. This comprehensive study will not only allow for the federal government to apply necessary regulations to protect surface and groundwater in relation to drinking water supplies. It will also serve as a foundation for much needed further investigation into the impacts on aquatic systems, and air quality missing from this study. Exempting aquatic ecosystems from this study will leave many sensitive habitats at risk, and will inhibit the EPA's ability to accurately weigh all impacts of large scale water withdrawals.

ADK asserts the need for accurate accounting and regulations for the enormous amount of water withdrawals required to support this activity. Any entity extracting 50,000 gallons a day or more should be required to obtain a permit. In the event of a water shortage, localities need the ability to expeditiously locate large water consumers, and should be able to reflexively create and implement solutions, such as limiting the amount of water that can be taken during drier seasons. Not only should State owned bodies of water be off limits to extraction for drilling purposes, but any surface water extraction for the purpose of hydraulic fracturing, regardless of the amount, should require a permit. A large increase in wells requiring large amounts of water must be closely regulated. An increase in this activity can have a sizeable impact on the many lakes and streams that are popular for fishing, canoeing, and kayaking especially during low flow periods.

It is alarming to learn that none of the 27 states that allow hydraulic fracturing require the drillers to report the amount of flowback water created to the state or federal government. If the state is not aware to the amount of wastewater, there is no way to ensure that this waste is being disposed of properly. It is encouraging to see that the EPA is already alleging that municipal water treatment is an insufficient means of treatment, and expect regulations prohibiting this practice will follow the conclusion of this study.

We also appreciate the EPA assessing the short- and long-term effects resulting from inadequate treatment of hydraulic fracturing wastewaters, but we believe that the same assessment should be done for deep well injection of this contaminated fluid. It may be prudent to develop a requirement as part of a drilling application the energy company must have a commitment from a wastewater treatment facility verifying that they can accept the flowback water created, and limit water used for hydraulic fracturing based on what can be treated.

Another unique feature of the Marcellus formation in New York is the naturally occurring radioactivity that exists beneath the surface. Hydraulic fracturing will not only create new routes of exposure through the now fractured shale formation. The radioactivity of the brine from traditional vertical wells drilled into Marcellus Shale was found to be 267 times the recommended EPA levels under the Safe Drinking Water Act; ²it is yet to be determined how this radioactivity will be addressed, or how it will affect a wastewater treatment facility.

Some in the industry have suggested a larger, centralized impoundment which could serve multiple pads over a two mile square area. This means that flowback water from several pads could potentially be released into this impoundment, which would continue in a “quasi-continuous” fashion for over a year and the emissions from this centralized impoundment could easily be considered “quasi-continuous” over a year. Industry has also indicated a desire to keep the offsite impoundments open for up to three years, making the presence of the impoundment much more long term, the chance of accidents greater, and the impact to the environment increased.

To this point, there has been no assessment into the impacts of “quasi-continuous” open pits. We hope to see the EPA take these scenarios into consideration when assessing risks to surface water. Outside of the serious risks to surface water correlated with allowing these pits; evaporation of known carcinogens such as benzene, toluene, and xylene, should also be mitigated. We believe that flowback water should always be completely contained. After this study we believe the EPA will concur that sealed tanks are the only way to ensure surface water will not be compromised. If these large centralized flowback pits are permitted, we would urge the EPA to study the impact of the increased size and duration of operation.

“Though the potential for severe negative impacts from any one site is low, when all activities in the State are considered together, the potential for negative impacts on water quality, land use, endangered species and sensitive habitats increase significantly.”³

We would encourage the EPA to study what the impacts on drinking water if a region was exploited for natural gas to the fullest extent allowed by that state’s spacing requirements.

Hydraulic fracturing involves injecting 3 to 8 million gallons of water mixed with 80 to 300 tons of chemicals at extremely high pressure. In the Marcellus formation, less than half of the injected solution returns to the surface. We are encouraged that the EPA acknowledges that this wastewater can not be treated by conventional wastewater treatment plants. Only a handful of plants in the Northeast are capable to handle radioactive water contaminated with high amounts of salt, sand, diesel, and other chemicals. These plants are too few and too limited in numbers and capacity to filter and make safe the anticipated billions of gallons of wastewater anticipated to be produced.⁴ Scientific American recently reported:

“Currently, no plant in Pennsylvania has the technology to remove TDS and it is unlikely that plants capable of doing so can be built by 2011. The company whose bid is furthest along in the permitting

² CCE, Action Alert, <http://www.citizenscampaign.org/alerts/alert-2010-08-d.htm>

³ *dSGEIS*, Section 6.13, “Cumulative Impacts”

⁴ Hazen and Sawyer Report, p.44.

process won't be ready until 2013. And at its peak that plant can only handle 400,000 gallons per day. The DEP would need 50 plants of that size to process all the waste water expected by 2011."

The heavily saline water requires sophisticated desalinization or reverse osmosis membrane facilities that do not exist in the region able to operate in a capacity sufficient to handle the volume of wastewater anticipated to be created by Marcellus gas exploitation in New York. Without the infrastructure for proper disposal in place, New York will be vulnerable to illegal dumping. The EPA should require disposal plans be approved as a part of the permitting process. Even if New York had a sufficient number of waste water treatment facilities, the EPA should still consider the potential for drinking water contamination as a result of the disposal of the many thousands of tons of crystalline salt cake resulting from the desalinization process.

Moreover, desalinization requires a great deal of energy to operate while generating air pollution and greenhouse gas emissions. The EPA should commit to address the serious gap between the amount of flowback wastewater produced by the anticipated level of gas drilling operations compared to the capacity of existing specialized wastewater treatment facilities able to properly clean waste water.

Industry has suggested that the solution to the presently inadequate wastewater treatment capacity is to allow the injection disposal of flowback water deep into natural rock formations. This is unproven technology and presents a serious risk for groundwater contamination particularly in view of the fractures, fissures and seismic activity of New York's geological formations.⁵

The geology under the Marcellus is much different than other formations that have been exploited using hydraulic fracturing. In addition to the risks associated with the faults and fissures beneath the surface, radon is also released making flowback water radioactive. This heavily contaminated water would cause serious harm if it were consumed. The fractures and fissures beneath the surface make deep well injection of this water too risky to be disposed of using this method.

Deep injection wells have become the preferred alternative for disposing of the billions of gallons of water used annually in this process. Outside of the Marcellus shale, this option is widely used. In all circumstances taking this amount of freshwater out of the natural hydraulic cycle will result in a negative impact on this country's ability to provide adequate clean water to its citizens.

ADK understands the economic hardships facing the country but would stress that we must not allow our unique historic and natural environment to be sacrificed to industrialization for short term energy resource opportunities. Natural gas wells drilled in Pennsylvania's ANF were drilled during the period that energy prices were at their highest. These wells are mere miles from New York's border and of similar depth and width of the Marcellus Shale in Western New York under Allegany State Park.

⁵Hazen and Sawyer Report, p.40.

ADK strongly believes that economic growth and environmental sustainability can be achieved if we base regulations on sound scientific findings, and staff our regulatory agencies to properly handle oversight needed for this type of technology. With cooperation between federal, state, and local governments, residents, and the environmental community we can drill in a way that does not jeopardize the natural resources of our state. Thank you for the opportunity to express our concerns and opinions. Please feel free to contact me with any questions.

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