



Wendy Lathrop is licensed as a Professional Land Surveyor in NJ, PA, DE, and MD, and has been involved since 1974 in surveying projects ranging from construction to boundary to environmental land use disputes. She is a Professional Planner in NJ, and a Certified Floodplain Manager through ASFPM.

Ripple Effects Above and Below

The most popular saying around one office I worked in was, “You can have anything you want, but you have to pay the price.” Both clients and employees heard it frequently. But it applies to life on a broader scale as well, affecting many aspects of the world we live in.

One of our current great economic worries is finding energy sources that are sustainable, renewable, and domestic. The siting of these sources is a major land use problem. Coal mining through either strip mining or the current practice of mountaintop removal creates an environmental nightmare. Oil spills along our coastlines have killed countless birds and animals. Windmills, though a less ominous presence, earn protests because they obstruct views and slaughter birds.

The discovery of a vast reserve of natural gas below the Marcellus shale formations of the eastern states seems to be a great breakthrough in solving our international oil dependencies. Some landowners situated over the gas trapped between the sedimentary layers of the Marcellus formation are ecstatic to be given an opportunity to earn royalties in a manner similar to farmers and ranchers further west on whose land drilling hit liquid black gold. Others are concerned about present and future environmental risks, but reluctantly agree to sign agreements, knowing that the gas beneath their land will be drawn out along with the gas from their neighbors’ drillings, simply due to the physics of gas extraction.

Leases are drawn up, drills put in place, and the process of fracturing the shale in order to release the gas begins. But a ripple effect is beginning to raise

other land use issues in Pennsylvania, Ohio, Virginia, West Virginia, Maryland, and New York, similar to what residents in other parts of the country have already experienced.

Much of this is related to the fracturing process itself, which requires massive amounts of surface water to be pumped thousands of feet down into the rock at high pressure in order to release the gas from the pore spaces and vertical fractures of the rock. The injected water is part of a mixture including sand particles that will keep the resulting fissures in the shale open so that the natural gas from

rigs used in the current operations. While natural gas drilling is not new in these areas, rigs requiring 80 trucks to transport and well pads requiring four level acres of clearing are a shock. About 660,000 acres of Pennsylvania’s 2.1 million acres of state forest are currently leased for drilling; it has been estimated that the Marcellus Shale formation underlines about three quarters of the state’s forests.

Obviously, such leases signify a dramatic change in the use of state forests away from recreation. Beyond disappointed hunters whose deer and turkey stalking will be affected by clear cutting

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the shale can be extracted through the well. Chemical agents in the pressurized mixture have raised concerns in other parts of the country where this process is in use. Chemicals dumped into waste pits in New Mexico have leached into the water table. Colorado and Wyoming have reported spills and contaminants such as carcinogenic benzene in aquifers, streams, and well water. Methane in groundwater in Colorado, Ohio, and Pennsylvania has been linked to drilling.

Residents in rural parts of northern Pennsylvania now find themselves completely unprepared for the change in their dense forests due to sheer size of

and noise, drilling operations represent a dramatic change in traffic. Much of the water required for pressurized fracturing (“fracking”) must be brought in by truck to these particular areas. Resulting wastewater must also be trucked away for treatment, translating to hundreds of daily truck trips through the state forests. In at least one Pennsylvania state forest, the balance between the commonwealth’s financial interests and the forest’s environmental integrity seems to be swinging toward the drillers, who complain about fees for clearing timber and dealing with pesky lease issues with landowners.

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In Pennsylvania's Susquehanna County just south of the New York border, residents who signed leases with Cabot Oil & Gas Corporation have joined in a suit claiming that Cabot's operations have polluted their wells with methane gas and other contaminants, destroyed the value of their homes, and caused medical problems. Wastewater spills and the release of dangerous substances through fracking (possibly the cause of smelly, discolored water in 13 polluted wells) form the basis of the residents' arguments.

Hundreds of miles away, in the state's southeastern counties, one wastewater treatment plant acquired a state permit in March 2009 to accept drilling wastewater from upstate. Arriving by truck or train, the water would be treated and then discharged into the Delaware River. But in early December, the Department of Environmental Protection rescinded the permit, saying only, "Mistakes were made".

And so we find a developing crisis in balancing environmental and energy concerns. One issue ripples into another, spreading further afield and affecting more aspects of our lives. Energy. Clean water. Open space. Don't forget private land rights.

We have always heard that real property rights extend from the zenith in the heavens above our land to the center of the earth. However, there are caveats, some written only in legislation and common law rather than in our deeds. We are subject to the rights of aeronautic travel above our lands. We are subject to the rights of the public as held in trust by the sovereign governmental body between high and low water. We have only restricted rights to the minerals beneath our properties, some minerals being reserved to the state and federal governments by statute.

Owners of one Lackawanna County farm were unwilling to sign a gas lease, worried about effects of drilling on two creeks bounding their property, the overall effect on the aquifer feeding everyone's wells, the noise, the clearing of forests, and changes forced upon their rural lifestyle. After neighbors on three sides signed leases, the gas company told the holdouts that it was a mere nicety to offer them a lease, even without horizontal drilling.

In choosing what we want, what price (not necessarily in dollars) are we willing to pay? Whatever the answer, consider the ripple effects. 