

# FRACK ATTACK

Natural gas drilling has scarred Pennsylvania's pastoral landscape, divided communities and neighbors, and raised serious questions about public health

IMAGES FROM THE MARCELLUS SHALE DOCUMENTARY PROJECT

TEXT BY ELIZABETH ROYTE

**Photograph by Martha Rial:** Drill rigs and access roads carve great gashes in Pennsylvania's pristine Tiadaghton State Forest.

phasizing how ideas that fall under the rubric of smart growth benefit *all* of us, wherever we reside. Their new message needs to be: if you really love your suburban quality of life, then know that the greatest

threat to it isn't coming from bureaucrats, environmentalists, or liberal politicians. It's coming from that brand new, almost-completed housing development going up right next to yours.

Did you move to the outskirts of town to be closer to nature? So did my parents, who relocated from Dallas to a quiet lakeside community in the Texas Hill Country in 1997. Back then, the 15-mile drive to their house from central Austin took 30 minutes and led you through farmland, ranchland, and protected wildlife habitat. A peaceful after-dinner drive to "count the deer" was a favorite pastime. "It wasn't considered a good night if we didn't count at least a hundred," my mother recalls. Now, she says, they're lucky if they see three or four. Between 1990 and 2010, the human population of their community grew by more than 240 percent—turning it from a quiet refuge to a busy exurb. Once, my parents could look outside their window and see green hillsides; now "it's just the rooftops" of the more than 2,000 single-family homes permitted for construction since the year they moved in.

Did you escape to the suburbs because you hated big-city traffic? Even if all the deer hadn't been run out of my parents' exurb, there's no such thing as a "peaceful after-dinner drive" near their home anymore. The residents of their community average 2.6 vehicles per household,

**onearth.org**

Jeff Turrentine offers new perspectives on the man-made environment in his blog at [onearth.org/humanlandscape](http://onearth.org/humanlandscape)

and those vehicles now jam the single artery leading into and out of town. More than three-quarters of these drivers are solo commuters; fewer than 10 percent carpool. What used to be a half-hour drive

to and from central Austin can now take twice as long.

Did you move to the suburbs for safety and stability? Perpetrators of property crimes love sprawl; it's great for business. The combination of low-density, single-family housing with an absence of pedestrian culture means more back doors for the jimmying and more windows for the breaking, all conveniently hidden from the eyes and ears of potential witnesses. From 2001 to 2011, my parents' idyllic community saw its own crime index rise substantially.

Sprawl destroys the defining character of suburbs by conferring upon them many problems associated with urban areas: crime, congestion, paved-over wilderness. And yet Stanley Kurtz assails urban growth boundaries—which draw a literal line in the sand, then limit development beyond it—as a liberal scheme "to force suburban residents into densely packed cities." But if that's true, why did the citizens of conservative Virginia Beach, Virginia, establish one back in 1979? The answer is that their "green line," which has restricted sprawl to the city's northern half, has preserved the unique agricultural character of the southern half; as a result, today there are nearly 170 working farms within the city limits. Similarly, these boundaries didn't seem so sinister to the Tennessee General Assembly, which passed a law in 1998 requiring every independent county in the state to adopt them, explicitly citing a statewide need to "minimize urban sprawl."

Mass transit, too, offers far-flung suburbanites relief from sprawl's ill effects, in this case by reducing their commute times and increasing the amount of time they get to spend at home. So why would Joel Kotkin blithely dismiss it as "offer[ing] little to anyone who lives outside a handful of large metropolitan cores"? Has he ever talked to an exasperated exurban commuter? The first decade of this century saw 60 percent population growth in America's exurbs. As they added 10 million people to their numbers, the number of road miles driven by Americans increased by nearly 200 billion. Even putting aside the amount of atmospheric CO<sub>2</sub> that all those extra miles represent, you'd think Kotkin would see how giving people mass-transit options promises to improve *everyone's* commute—drivers included.

In the century since they first appeared on our physical and cultural horizon, the suburbs have earned the right to consider themselves every bit as American as our gleaming cities and rolling farmlands. There's no stealth plan to "abolish" them. There is, instead, a perfectly transparent plan to include them in the list of communities that must be brought into the sustainability fold if we're ever to address climate change effectively, protect wildlife habitat, and ensure that we don't pollute or deplete our resources to the point of no return. Smart growth is great for cities—but it's great for suburbs too. People who love them should understand that any concerted effort to make them cleaner, prettier, safer, and less congested is a conspiracy worth joining. 🐦

Jeff Turrentine is OnEarth's articles editor. His hometown of Richardson, Texas, inspired the suburb depicted in the TV show *King of the Hill*.

---

SHORT TAKE

---

## Carbon-cutting Ceremony

THE PEOPLE WHO RUN AMERICA'S SUBURBS are fully aware of how sprawl, and blind obeisance to the car culture that feeds it, negatively affect their communities. At last count, more than 1,000 mayors had signed their names to the U.S. Conference of Mayors Climate Protection Agreement, formalizing their commitment to meet (or even exceed) standards put forth by the Kyoto Protocol. The wording of the 2005 declaration is unambiguous: to take steps that would "reduce sprawl, preserve open space, and create compact, walkable urban communities" and to promote measures that would reduce car dependence: public transit, carpool incentive programs, and bicycle trails. Tellingly, the majority of signatories aren't mayors of major urban centers, but of inner- and outer-ring suburbs. Visit [usmayors.org/climateprotection](http://usmayors.org/climateprotection) to see if your mayor is on the list.





**Photograph by Noah Addis:** A Rex Energy gas-drilling rig lights up the night sky over Connoquenessing Township, Pennsylvania.

THE DEFINING NATURAL FEATURE OF NORTHERN PENNSYLVANIA is its woodlands, which make up one of the largest expanses of publicly accessible forest remaining in the eastern United States. Though decimated by logging in the late nineteenth and early twentieth centuries, this region has been recovering for nearly 100 years, and now attracts hundreds of thousands of hunters and trout fishers, hikers and canoers, bird-watchers, campers, skiers, and stargazers. (The so-called Pennsylvania Wilds are renowned for their exceptionally dark skies.)

But these plateaus of hardwoods and conifers, whose biological diversity and ecological integrity send scientists into reveries, are coming under increasing pressure from the rapidly expanding energy industry. Most of Pennsylvania lies atop the gas-rich Marcellus Shale, where industry may develop as many as 60,000 wells over the next two decades—two-thirds of them within forest areas. The opening photograph by Martha Rial, taken over Tiadaghton State Forest in Lycoming County, hints at what's at stake.

The Marcellus Shale Documentary Project ([the-msdp.us](http://the-msdp.us)) is a nearly yearlong reconnaissance by six veteran photographers of the impact of shale gas in Pennsylvania. Taken together, the work depicts both winners and losers, the good and the bad, the awesome and the appalling. At times it's difficult to say which is which: the issues are that complicated, the social and economic terrain ever shifting, and the dividing lines surprisingly fluid.

By any measure, extracting natural gas from deep shale formations is an ugly process. Three-and-a-half-acre drill pads are scraped from the earth, then connected with roads, pipelines, and million-gallon ponds

that hold fresh and contaminated water. Clearings are crammed with condensate tanks, separators, compressors, generators, chemical-filled storage containers the size of freight cars, office trailers, and Porta-Potties. Drill rigs, like the one pictured above, project like rocket gantries from the rolling terrain.

What happens underground is no less violent for going unobserved. After reaching the shale formation, in places more than a mile deep, operators turn their drill bits 90 degrees and proceed for another thousand feet or more. They blast small holes in the lateral borehole, then inject millions of gallons of highly pressurized water laced with chemicals and sand. The shale fractures, releasing pockets of natural gas along with water now contaminated with volatile organic compounds, radioactive materials, and heavy metals. (Many of these chemicals are linked with cancer, genetic mutations, and endocrine disruption.)

The development of a drilling site involves roughly 1,000 vehicle trips back and forth each day, generating plumes of dust and diesel exhaust and straining local roadways. Engines rev, steel clanks, trucks beep, and the earth shakes as pipes are pounded into wells. At night, methane flares lend forests and cornfields a Hadean glow. During drilling and fracking, high-intensity lights shine around the clock. Noxious fumes from vehicles, tanks, flares, and wellheads drift on the wind.

Nobody likes these intrusions, but industry reminds us that most of the assaults are temporary: drilling a single well can take months, but fracking rarely lasts longer than a few days. Still, opponents say, degradation of groundwater and soil (to say nothing of forest fragmentation and increased runoff of pollutants into streams) will last far longer. Then



**Photograph by Brian Cohen:** Since Janet McIntyre's well water went bad, she has suffered from rashes, nosebleeds, and other ailments.

there are the social impacts: depressed home and business values, increased traffic and crime (as transient workers move in), rental units priced beyond the reach of non-gas-field workers, and fractured relations with neighbors, especially when drilling rigs rise just over the property line of a homeowner who will receive no financial benefit.

On the flip side, energy booms have also boosted local economies, manufacturing, and tax revenues. Oil and gas royalties have allowed livestock owners to expand herds, parents to send children to college, and debtors to pay off loans. And let us not forget that natural gas is abundant, cheap (for the moment), and domestically sourced. Burning it generates fewer greenhouse gases than does burning coal, but producing it—a process during which up to 9 percent of total gas output may be lost through venting and leaks—may negate those advantages.

Perhaps the most worrisome aspect of drilling and fracking operations is their long time line of uncertainty. No one knows for sure if shale-gas extraction, even when performed to the letter of existing law, harms human health. Anecdotes of illness and death and reports of contaminated air, water, and soil abound. Janet McIntyre, pictured above in her living room in Butler County, claims that nearby drilling contaminated her tap water. She now uses bottled water for drinking, cooking, and bathing. But proving cause and effect, especially when energy companies aren't required to disclose all the chemicals they use or discharge, is extremely difficult.

Unfortunately, the federal government hasn't funded any long-term studies of the transport and fate of fracking chemicals, let alone how

these might interact with existing compounds in the environment or whether they move into plants and animals consumed by humans. The Environmental Protection Agency is currently conducting a four-year study of fracking's impact on drinking water, but the results aren't due until 2014 and are not expected to define the probability of water contamination.

Compared with mountaintop removal or strip mining for coal, the footprint of shale-gas extraction is admittedly small. Drilling rigs eventually come down (though the heavy equipment may return to re-fracture existing wells numerous times over several decades), well pads shrink, and wastewater impoundments are filled in after wells quit producing. Still, these operations' social and environmental effects ripple widely, both because the practice continues to grow (and will grow even faster in the Marcellus if Governor Andrew Cuomo lifts New York State's current fracking moratorium) and because every additional drill site requires ever more associated infrastructure: pipelines, access roads, processing plants, substations, compressor stations, and staging areas. Already, gas companies have leased about seven million acres of Pennsylvania's

public and private property—a quarter of the state's landmass, including 385,400 acres of state forest land.

As energy extraction industrializes the countryside, it's exactly these forest refuges that gas field residents will turn to for solace. How disappointing, then, to discover—or just to learn, for those who take comfort simply in the knowledge of wild places—that these dense and contiguous forests, so recently recovered, have quite recently been rebroken. 🐦

For expanded coverage of the Marcellus Shale Documentary Project, visit [onearth.org/13spr/frackpix](http://onearth.org/13spr/frackpix)

BY MATTHEW POWER

THE DESOLATE STRETCH OF TERRITORY alongside the South Branch of the Chicago River is littered with the shed husks of the city's industrial past. Along overgrown banks, the rusting ribs of derelict warehouses poke out beneath crumbling storage silos. Just before South Ashland Avenue cuts across the river, there is a small spit of land where the South Branch splits—a couple of acres at most. Canal Origins Park is choked with weeds and windblown trash. Its concrete path leading to the river is lined with historical signs, now sun-bleached and obscured by a palimpsest of graffiti tags. A line of electrical pylons marches along the riverbank toward the hazy skyline of downtown, four miles distant.

Locals gather at a railing, fishing in the brown water. One angler, a retired limo driver originally from Michoacán, Mexico, chomps a cigar

vividly described it, the creek was so clogged with grease and offal that people would mistake it for solid ground and fall in. Sometimes the surface would catch fire. Bubbles of methane would periodically rise up from the depths and burst, giving it its nickname, Bubbly Creek.

A shout goes up at the rail as a second fisherman struggles with his bent-double rod. ("Might've got one!" he yells out to his friends, before adding the requisite punch line: "But it's got three eyes!") When he finally hauls his catch onto the bank, it is revealed to be not a fish at all, but rather a large (and angry) red-eared slider turtle. A group gathers around as he frantically tries to remove the hook without losing a finger to the turtle's snapping beak. Eventually the hook is freed, and everyone steps back as the dripping creature scuttles to the edge and launches itself over, splashing down

## CRY US A RIVER IN 1900, CHICAGOANS REMADE THEIR CITY'S NAMESAKE RIVER. THEN THEY LET IT GO TO HELL. NOW THE QUESTION LOOMS: CAN THEY SAVE THE WATERWAY THAT MADE CHICAGO GREAT?

beneath his handlebar mustache and surveys the scene. I ask him if he ever eats fish from the river, and he just laughs. He's a regular here, he tells me, but returned to the spot only a few days ago after having stayed away for weeks.

"The day after it rained, there was so much dead fish floating around," he says, gesturing toward the river with his cigar. "Hundreds of 'em." Chicago's municipal sewer system, overwhelmed by the heavy rainstorm, had overflowed again. He points to the concrete drainpipes that had disgorged tens of thousands of gallons of untreated waste and pollutants into the river. "They tested the water, said it was safe," he says. "Maybe it was. I left, and I didn't come back. It was horrible—the smell."

It's been a troubled stretch of water for a long time. Made infamous in Upton Sinclair's 1906 novel, *The Jungle*, the south fork of the South Branch served as the gutter for the vast Union Stock Yards, at one time the world's largest meat producer, where several hundred million head of livestock were processed in the century after the Civil War. As Sinclair

and vanishing beneath the murky water.

The turtle is a strange visitor in such a profoundly altered landscape, one where the natural world seems buried beneath a sedimentary burden of human detritus. But as unloved and forgotten as this little river junction appears, it has been as central to Chicago's history as the skyscrapers piled up theatrically in the distance. It's hard to ascribe majesty to such a dirty, ruin-crowded waterway, a rill so narrow it can be easily spanned by a well-thrown baseball. But it would be even harder to overstate this river's importance to both the past and future of its city. Chicago—and America along with it—grew up around this river. A burgeoning nation's commerce, sweeping migrations of humanity, colossal feats of engineering and architecture: all combined on either side of its banks to form the "stormy, husky, brawling, City of the Big Shoulders" that Carl Sandburg invoked in his great poem "Chicago."

More than a century ago in this exact spot, human

### SHOWCASE WATERWAY

The Chicago River winds through the city, making it an attraction for sightseers and an inescapable aspect of daily life for residents.

PHOTOGRAPHS BY NIKOLAS KOENIG