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## UNDERMINED

In southwestern Pennsylvania, a radical form of coal mining crumbles the American dream for many homeowners.



**F**ramed by steel braces supporting the walls of his house, Roy Brendel balances atop a makeshift wood porch to escort a visitor over the construction debris. It looks like a remodeling project is under way at Brendel's historic house tucked away in this picturesque hollow in the southwest corner of Pennsylvania. But, in fact, the braces represent a desperate attempt to save his dream house from collapse.

"This was my house," says the retired school guidance counselor, surveying the thick web of wood and metal that props up the once-gracious Spanish Revival villa.

The way Brendel and his wife, Diane, see it, they lived almost 30 years in paradise, investing everything they had in restoring their unique house, designing landscaping, and planting gardens. They have lived the last 2½ years in a house of cards. Nothing has been the same since the coal-mining machines came through.

In November 2000, in less than a day, a mining machine sliced under the Brendels' property, cutting through the coal seam 450 feet below. They didn't feel a thing at the time.

But within days, the concrete house had cracked. It began with a rustle of wallpaper peeling in the Brendels' bedroom. Soon the exterior walls shifted off the foundation, fissures opened clear through the foot-thick walls, the pool imploded.

Their well went dry, and they lost their natural-gas supply.

It was not vandalism. It was a legal activity in a part of the state where most

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Amy Worden is an Inquirer staff writer. Hinda Schuman and Linda Johnson are Inquirer suburban photographers.

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Diane Brendel in her living room. The Brendels live in four rooms of the 12-room house, with many of their belongings stored in a trailer.



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property owners own surface rights, but coal companies control the mineral rights below.

Today, the Brendels live a cramped existence in four rooms of their 12-room house. Their most precious household items, along with stained-glass windows and mirrors, are stored in a trailer out back.

A tarp covers the roof. Wooden frame pillars called cribs, typically used to prevent mine ceilings from collapse, support the foundation. Deep cracks scar the facade. Inside, the art-deco glass-block windows are covered in duct tape, and gaping fissures slice across the plaster. Windows are jammed shut, and some doors won't close. A section of wood floor in the den has buckled severely; in another room, the floor slopes so steeply that the bed has been known to slide across it.

The Brendels rely on water that is trucked in, and on propane for fuel.

"People used to come to the house because it was so beautiful; now they come because it's so horrendous," said Diane Brendel, 56, a former schoolteacher.

To the Brendels and others living in these coalfields, the legacy of longwall mining is written on their damaged homes, devastated land and water resources, and fractured communities.

Coal is at once the lifeblood and wrecker of havoc in southwest Pennsylvania and is embedded in the history of Greene County, one of the poorest counties in the region. Until last year, Greene was a fixture on the Appalachian Regional Commission's "most distressed counties" list, with an average per-capita income of \$16,000.

Its riches lie below the surface. The Brendels' house, like thousands of others, sits above the same 100-mile coal seam that made Victorian-era robber barons rich, fueled the economy of Western Pennsylvania, and powered generators throughout the nation for more than a century.

At the turn of the century, homeowners sold their mineral rights to coal companies. Some made out well; some sold out for as little as \$1. Little did they know the burden that their heirs and future property owners would face.

With only 70 residents per square

In the basement, braces shore up the foundation of the Brendels' house. They lost their water and natural gas lines as well.



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Ray Patterson has seen damage to his horse farm in the town of Eighty-Four.

mile (compared with 573 in Chester County), Greene County is more akin to West Virginia than it is to the rest of Pennsylvania, with small settlements in the hollows between the rolling hills. What isn't forested is largely given over to pastureland. There are basically only two highways, crossing at the county seat of Waynesburg, a historic borough of 4,200.

There is little indication that 60 percent of the county is actively being undermined to supply power for the Northeast. Southwestern Pennsylvania has eight active mines, four operated by Consol Energy, a German-owned company. Since most of the work is done underground, one can drive for miles without spotting mining activity. Only the coal company signs marking the routes to air shafts and entryways are visible. But the pastoral view is illusory.

In the 1980s, traditional room-and-pillar coal mining began to be replaced by a far more lucrative process called longwall mining — the underground equivalent of forest clear-cutting.

In longwall mining, panels as wide as 1,200 feet and two miles long are carved out by a machine using a rotating drum with sawtooth blades. The drum moves back and forth across the face of the panel, like a meat slicer. Miners reach the coal seam by elevator, and the machine, moved in pieces into the mine by rail car, is assembled underground. An operator guides the mining machine by remote control. The loosened coal falls onto a conveyor to be removed.

There's a reason longwall mining is called "full extraction" mining. A quarter-century ago, a typical Pennsylvania room-and-pillar mine would remove 1.1 million

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The mining company moved Ray and Mary Jane Patterson's 18th-century farmhouse out of the way.

### Longwall mining is far more lucrative than traditional mining.

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The main part of the Pattersons' barn is more than 100 years old. Mining collapsed this portion, and caused the silo to tilt.



Mary Jane Patterson looks over new damage to the barn. Cracks in the foundation at left have been filled.



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## Above the mines, dry

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tons, compared with 5.6 million tons today.

Unlike room-and-pillar mining, the longwall method leaves behind no supports. As a result, the mine ceilings collapse as the machine moves through, causing everything above to sink as much as four feet within days. This includes streams, springs and wells, and virtually all structures and roads on the surface.

It's not a matter of a simple, minor loss of elevation. Several hundred vertical feet of the Earth's crust can contain a remarkable variety of geologic phenomena, with rock formations of varying density and structural integrity, aquifers, underground streams, caves, and more. When suddenly there is a large swath of void under all that, what's above shifts and collapses in innumerable movements, creating new cracks and fissures below ground while filling or compressing others. The flow of water, always seeking the lowest point from which it cannot escape, can be radically affected.

On the surface, the effects can look as if an earthquake hit, with breaks in roads and other distortions. (A few collapses show up in the U.S. Geological Survey's earthquake catalogs.)

Traditional mining is hardly benign — it is the source of the word *undermine* — but one indication of the difference is the average cost to repair a damaged structure: \$13,000 for room-and-pillar mining, compared with \$79,000 for longwall mining. And virtually all structures above longwall mining panels sustain some damage.

Two decades of longwall mining has radically altered the topography of Greene County and nearby Washington County, the heart of longwall mining operations in Pennsylvania. A change in state law in 1994 opened up larger areas to mining and allowed more properties to be undermined, bringing more attention to an issue that had been largely confined to remote areas.

The catalog of damage is striking. In the machine's wake, dry fields have flooded, and wells and springs have dried up. Natural-gas arteries are severed. Ponds are emptied. Sections of roads collapse. Struc-

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## fields flood; wells and springs dry up; ponds are emptied; sections of roads collapse.

tures crack open.

To the casual observer, the most visible evidence is the tell-tale herd of "water buffaloes" marching across the landscape. These are large plastic containers that sit outside scores of homes and hold water for families whose wells have been ruined.

**"W**e are the land of the coal rape," said Cindy Bailey, editor of the Greene County Messenger, a weekly newspaper.

Like many residents, Bailey has deep family connections to mining. She understands firsthand the upheaval it can cause and also the stability it brings to working people. Both her father and her grandfather were coal miners. Her parents were driven from their home twice by the coal interests; first in the 1970s by a railroad line being built to a coal mine, then a decade later by longwall mining activity that so severely damaged what had been their new home that it had to be rebuilt.

To Bailey's family and many others, it was a trade-off worth making.

"Coal is the whole driving force of my life," she said. "I went to college because my dad made a decent living in the mine. Now my husband works in the mine. If you took coal out, there would be no life."

The Pittsburgh seam, a seven-foot-high slice of black gold, lies 40 stories underground and stretches 100 miles from Pittsburgh to Clarksville, W.Va., and about the same distance from Somerset to the Ohio state line. The seam is one of the richest deposits of bituminous coal in North America — a resource expected to last 50 more years. Despite efforts to develop renewable sources of energy, coal remains the cheapest source, providing half the power for the nation and 60 percent of the power in Pennsylvania.

But many residents of the southwestern corner of the state say they pay the price at home and will continue to pay for years to come. They must endure the mountainous eyesores of coal waste known as "gob" piles, the water pollution from acid mine drainage, coal dust from processing plants, and the destruction and disruption that come with longwall mining.

Once, the coal industry employed one in 20 Pennsylvanians. Today, with 1.2 million Pennsylvanians, the number working

in the industry has dropped to 8,600 — 3,000 of them in Greene County, where coal remains the major employer. It provides at least 40 percent of the property-tax base throughout the county; in some school districts, that figure rises to 62 percent.

For many in Greene County, coal mining could be summed up in the phrase "can't live with it, can't live without it."

**F**ifteen miles from the Brendels' home, Laurie Williams, 77, and her husband, Murray, 80, are repairing the latest cracks in their plaster walls.

Their historic brick house fared better than the Brendels'. The mining company, RAG Emerald Resources, was able to save the 1850 Greek Revival house from severe damage by removing the porch and wrapping the house in cables and rope before mining began. Still, a corner of the house collapsed and the facade shifted several inches off its foundation, then back again, sending cracks rippling through every

room. The Williamses' well and ponds emptied, and their gas supply was severed.

They continue to live with dust and the fear that another crack might appear. Every day brings new headaches for the retired couple: negotiating with the coal company over a repair, or worrying about the price they could get for their house if they had to sell it and move to a nursing home.

"It's very stressful," said Laurie Williams, who estimates she spends \$300 to \$500 a month on medicine and an oxygen machine for asthma brought on by the dust.

"It's been going on too long," she said. "I think of all the years I'm missing."

Many people feel they can't battle big coal and win. Some settle and are content. The range of settlements is broad, anywhere from a few thousand dollars to repair cracks to hundreds of thousands to rebuild or buy out a property owner. Sometimes payments are made up front; other times they are negotiated over a period that

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Judy and Ralph Anderson say the Consol mining company has repaired damage to their home and to a personal-care facility they operate in Claysville.



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could last several years.

Some people are resigned to the inconvenience as an economic trade-off.

"That anybody's home is destroyed is one too many, but we're biting the hand that feeds us. If not for coal mines, Greene County wouldn't be here," said John Frazier, the county assessor, who is bracing for the day that may come later this year when his house will be undermined. "What are you going to do? It's like a hurricane; you just have to ride it out."

Elderly residents, many of whom enjoy comfortable retirements on coal company pensions, and low-income residents are likely to take the payouts and move or live with the disruption.

Consol spokesman Tom Hoffman said the company was able to resolve the vast majority of claims. In many cases, he said, the payout is more than the actual value of the property.

"Our goal at the end of the day is to say as a company that we did what



Homer Phillips Sr. of Whitely, Pa., says his well was contaminated with methane and mercury after blasting in a nearby mine.

we said we did. That people were compensated fairly and the house is back to the way it was," he said. "We think we do that."

But critics say the payouts often don't cover repairs that crop up long after the mining is done. They say the payouts don't begin to compensate for the stress, the lost water, agricultural or business losses, the decline in property

values, or disruptions to nearby property outside the area designated in a mining permit.

Longwall mining has broken apart communities and divided families, residents say. Diane Brendel counts at least seven neighbors who have moved out and abandoned their homes.

She's been charting their departures at the local post office. "I'd ask,

'What are those red dots over the postal boxes?' They'd tell me those boxes had been pulled because the people left. You're talking about a real loss of community."

Laurine Williams, whose house along with seven others in a valley outside Waynesburg was undermined in 2001, said she had seen families torn apart over whether to tough it out or sell property to the coal companies and move.

"It disrupts the neighborhood," she said, "because those who sell out don't repair their homes, and the rest of the community must suffer."

The 1994 legal changes were enacted at the end of the Casey administration but largely implemented by the Ridge administration. Although proponents hailed the legislation as imposing stricter regulations on the mining companies, many critics say the coal companies got too much leeway. They want to see the law amended so that mining companies prevent damage to

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homes, businesses and utilities, rather than pay to repair the damage afterward.

"It's one thing when you choose to remodel your house; it's another when forced upon you," said Mimi Filippelli. "You're trying to fix homes with earthquake damage."

The Brendels are among the few families with the passion and resources to challenge the coal company over longwall mining damage.

They point out that, because their house is listed on the National Register of Historic Places and protected from mining damage by federal law, they should receive full compensation for the damage to their property.

Until state law was amended in 1994, all homes built before 1966 were protected and could not be undermined. Until the change, mining companies, even though they owned mineral rights, had to dodge the older structures or consider large areas off limits.

"At the time we bought the house [in the 1970s] we thought we were safe," said Diane Brendel. "We invested everything we had in this house."

They point out that the coal company's offer of \$250,000 is considerably lower than the \$1.8 million the Brendels say it would cost to rebuild their architecturally significant house and restore the 133-acre property to its pre-mining state, water and all.

The Spanish Revival home in the



Homer Phillips Sr. fills a storage tank near his home with water that his nephew, Sean Phillips (rear), hauled from Waynesburg, 4 miles away.

crossroads community of Spraggs is unique for the area. It was built by a cavalry officer-turned-insurance salesman in 1939 to evoke the southwestern United States, where he was stationed in the Army. Throughout the house is elaborately carved oak and walnut paneling, and the floors and hearths are decorated with exquisite tile work depicting scenes of Mexico. In several places, a stunning floor-tile pattern was laid to look like a Mexican-Indian rug. Consol apparently is unimpressed, and the legal parrying continues.

The remedies available for homes don't apply to water.

The catastrophic shifts that occur below ground during longwall mining fracture stream beds and ponds,

draining them in some places and flooding areas that had been dry. The mine access areas — which show up every 1,200 feet between panels — do not subside and, as a result, act as dams in the streams, disrupting their natural flow.

In addition to getting a mining permit, companies must also get approval from the state Department of Environmental Protection to mine under streams. But environmental groups and the federal Office of Surface Mining charge that the agency has failed to enforce existing laws.

"The [state Clean Streams] law says you may not adversely affect the waters of the commonwealth. Not affect just a little," said Wyona Coleman, chairwoman of the Tri-County Mining Network. Coal companies have argued there

is no evidence of permanent damage to streams. Tell that to the people who fish them.

Jack Kerr, 64, retired utility worker, used to catch bait in Laurel Run a few hundred yards upstream from the Williams place. No more.

"The stream where I caught minnows and crabs, nothing," Kerr said. "There was no drought last year in Greene County, but there was no water in the streams."

The mining company, RAG Emerald, tried without success to patch the stream using grout. "They brought in tractor-trailer loads of grout and poured it in the stream bed," said Laurie Williams. "But Laurel Run is a disaster. There's no water in it."

David Hess, DEP secretary for the last two years of the Ridge and Schweiker administrations, said that after the Laurel Run debacle, his agency fined the company \$250,000 and instituted the stream permit process. Despite the devastation to Laurel Run, he said, a study conducted by his department found overall that the damage to streams was "not fatal."

The most comprehensive study to date, which is expected to be released this month, appears to dispute that claim.

The U.S. Fish and Wildlife Service looked at longwall mining damage to 131 streams in active mine areas in Washington and Greene Counties. A preliminary report showed that of the

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streams studied during a two-year period, almost half were severely altered by mining operations. "Coal companies have not shown that streams restore themselves or that they can restore them," said biologist Ed Perry, who worked on the study before retiring.

Gov. Rendell has nominated Kathleen McGinty, who ran the White House office of environmental policy during the Clinton administration, to head DEP. Last month, signaling a shift in policy, a department spokesman said: "The department agrees that there are adverse impacts and is instituting new regulatory requirements to prevent damage."

Rep. Camille "Bud" George, a Democrat from Clearfield in the center of the state, said he would reintroduce the Coal Communities Fairness Act, which had difficulty attracting Republican support and died when the legislative session ended last fall.

Though passage would again be doubtful, the bill would force mine companies to permanently replace water supplies within 90 days, instead of the current three years, and would require analyses of the physical and economic impacts of damage to surface structures before mining occurs. The bill also would prohibit mining beneath wetlands and streams.

Perhaps the most crushing blow is to farmers, who say coal companies may be able to restore water to residential properties by running water lines from nearby towns, but if the springs that provide water for livestock and irrigate their fields disappear, their farms are worthless.

Bill Lindley's 220-acre family farm is adjacent to a 7,000-acre site near Lone Pine in Washington County that is scheduled to be mined beginning next year.

"I have 10 springs and a small stream," said Lindley, who as a United Nations official helped farmers in Africa become self-sufficient. "It will render the farm useless if I lose water."

He is concerned about his neighbors — the 450 families in the path of the expansion of Consol Energy's giant Eight-Four mine — and is frustrated that property owners have not gotten much support from local lawmakers and Harrisburg.

"This is big business exploiting rural people, and no one seems to care," Lindley said.

**G**reene County assessor John Frazier is worried about the day when the coal is mined out and the tax base disappears. How much poorer can the county get?

But he also fears the day in the not-so-distant future when the coal machines will rattle the earth under his 12-acre property.

He's not too concerned about his modular home, which, unlike masonry houses, is easier to protect should the ground collapse and is less difficult to repair.

But Frazier frets about the pond where his 7-year-old son enjoys feeding the ducks.

"It probably won't be that way when the coal company comes through," he said. "Either it'll be dry, or I'll be living in an island in a lake." ●

Contact staff writer Amy Worden at 717-783-2584 or aworden@phillynews.com.

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