Natural gas production can restore water and natural habitat

Clayton Bubeck

Residents concerned about natural gas production in Pennsylvania usually point to the past as caution — an estimated 5,500 miles of rivers and streams already are polluted by abandoned mine drainage from historic mining practices. We can't afford any more harm to our water resources, they say.

And they're right. That's why Pennsylvania today maintains some of the most stringent regulations and environmental controls to ensure the safe, responsible development of natural gas. These laws protect the state's waterways from any potential impairment.

So, past isn't always prologue. And in fact, just the opposite is true today, with efforts underway – in harnessing the vast potential of Pennsylvania's natural gas industry – that address some of our most pressing environmental challenges.

More than 300 million gallons of polluted water discharge daily from abandoned coal mines into the state's waterways. These discharges kill fish and harm wildlife, taint the natural environment, affect property values and hamper economic development.

The problem has persisted for decades, largely because costs associated with cleaning up the mess are so enormous. Finding a fix requires creative approaches.

PHOTO/AMY SPANGLER

Natural gas producers use abandoned mine drainage as a source of water for hydraulic fracturing.

NEW POLICIES

Early this year, the state Department of Environmental Protection issued new policies that support natural gas-drilling companies in using abandoned mine drainage as a source of water for hydraulic fracturing. Fracturing technology has been an integral part of oil and natural gas production for more than 60 years.

Water is a key component in the well-completion process. Hydraulic fracturing uses millions of gallons of water to create microscopic fissures in dense shale formations, allowing the hydrocarbons to flow freely from the formation and into the well bore.

State regulators require a water-management plan for all proposed natural gas wells as part of the permitting process. That plan must identify all proposed water withdrawal sources for completion.

LESS FRESHWATER REQUIRED

Until now, the use of abandoned coal mine drainage had not been a viable option.

The new DEP policy – which was among the recommendations issued in 2011 by Gov. Tom Corbett's Marcellus Shale Advisory Commission that included natural gas companies and environmental groups – supports reducing the amount of pollution in the millions of gallons of drainage water entering the state's rivers and streams.

Use of such drainage also reduces the amount of freshwater needed for hydraulic fracturing.

Some natural gas-drilling companies already are exploring this option, with good results benefiting both operators and the community. More will do the same.

RESTORING WATERSHEDS

To help operators identify potential sites, DEP's policy also includes a map that shows the locations of major mine discharges near natural gas-drilling operations.

My firm, Rettew, has been working to remediate the effects of abandoned mine drainage for years, designing award-winning systems to remove pollutants, restore watersheds and bring back aquatic life to lifeless creeks and streams.

It's a daunting challenge. We've seen firsthand the destruction that abandoned mine drainage can have on our environment.

But we've also seen the amazing turnaround that can be achieved when work gets underway and the water and natural habitats are restored.

WATER RECYCLING, REUSE

The reuse of abandoned mine water is yet another example of the steps natural gas companies are taking to protect Pennsylvania's water resources.

In just the past few years, operators have pioneered large-scale water recycling initiatives to reuse produced water and complete additional wells while reducing freshwater needs. Almost all of the flow-back water in Pennsylvania is now recycled and reused; not a single drop is released into the state's rivers or streams.

Pennsylvania has more miles of mine-scarred streams than any other state. Yet, the potential to address this issue has never been greater.

The natural gas industry not only represents economic progress for our state, it also may provide a way to clean up our past – all without creating another burden on taxpayers.

Clayton Bubeck, Professional Engineer, is senior vice president at Rettew Associates Inc. in Allentown and an expert in abandoned mine drainage treatment. He can be reached at cbubeck@rettew.com.