

INTRODUCTION

We, the members of the Forty-Third Statewide Investigating Grand Jury, having received evidence regarding violations of the Clean Streams Law occurring in and around Susquehanna County, Pennsylvania, pursuant to Notice of Submission of Investigation Number 42, do hereby make the following findings of fact and recommendation of charges.

FINDINGS OF FACT

This presentment arises from a comprehensive and ongoing statewide investigation of numerous environmental crimes that have occurred during fracking operations in the Commonwealth of Pennsylvania. The investigation began in 2018, after county District Attorneys requested the assistance of the Office of Attorney General. The investigation has resulted in two other presentments recommending criminal charges. The Grand Jury further intends to issue a Report documenting bases for recommendations for legislative, executive, and administrative action. The current presentment addresses violation of Pennsylvania criminal statutes by Cabot Oil & Gas Corporation, causing the widespread contamination of residential water supplies in Susquehanna County.

Fracking

The criminal violations in question here arose in the context of unconventional drilling for natural gas, colloquially referred to as “fracking.” Fracking has enabled the extraction of oil and gas from once unsuitable geological formations. In Pennsylvania, unconventional drilling has targeted the Marcellus and Utica Shale formations. The Marcellus Shale Deposit stretches beneath 575 miles of West Virginia, Pennsylvania, Ohio and New York.

The Grand Jury learned that the process of drilling and fracking a well takes place in several stages. First, the well site is prepared by clearing and leveling the land, paving an access road for heavy truck traffic, and building a well pad for the drilling rig and other equipment

Once the site is prepared, drilling of the wells can begin. Several wells can be drilled at a single site. The drilling process requires large machinery to dig into the earth. Fluids and chemicals are poured into the drill hole – which is called a wellbore – to reduce friction and allow the drill cuttings to move up and out of the wellbore. After the hole is drilled, pipe is inserted to keep the wellbore stable. Then the drillers pump cement into any spaces remaining between the outside of the pipe and the walls of the hole. The cement secures the pipe in place.

When the drill gets down to an oil-bearing rock formation, the drill bit is gradually turned from vertical to horizontal. Drilling then continues horizontally, deep underground, for several thousand more feet.

Once the drilling is done, explosives are sent down the wellbore to perforate multiple holes in the rock. This is when the hydraulic fracturing process really begins. The gas sought in fracking operations does not flow freely underground, but is locked into solid rock formations called shale. Multiple fractures are created in the shale by pumping large amounts of fluid, at extremely high pressure, down the wellbore and into the perforations made by the explosives. The base fluid is water, but a variety of potentially dangerous chemical additives have to be mixed into the water to help release the gas trapped inside the shale. Once released, the gas flows up to the surface.

Witnesses explained that, during the drilling process, when cement is pumped in to seal the space between the wellbore and the pipe that lines it, the cement may be diluted by groundwater. The water can alter the precise balance of materials intended to maximize the cement's ability to bond and fill all voids. The result can be microscopic imperfections in the casing cement,

preventing it from properly filling the void between the pipe and the wellbore. Other flaws in the drilling process can also leave voids. After the well goes into production, these voids provide a vertical pathway for gas, including methane, to contaminate any geological feature through which the well travels, including migration into drinking water aquifers.

The Dimock drilling

Cabot Oil & Gas leased mineral rights from multiple residents in Dimock Township, Susquehanna County beginning in 2006. Shortly thereafter, Cabot began constructing well pads and drilling gas wells on numerous properties. Almost immediately after drilling began, residents in the area began to experience changes to their water. Some homeowners began to see a great amount of effervescence in their water. Others started noticing considerable sediment. Neighbors began to suspect that stray methane gas was migrating into the water supply.

A singular event caused most residents to recognize they had a problem: a water well spontaneously exploded, on the property of Norma Fiorentino. Nothing like it had ever happened before. The incident created a heightened level of concern from residents in the area. In spite of the fact that the explosion happened in proximity to the gas drilling activity, Cabot denied any responsibility. The company did, however, begin installing vents for residents' water wells to help remove the methane.

The Pennsylvania Department of Environmental Protection (DEP) utilized multiple investigative techniques to conclude that Cabot's activities had unleashed stray gas from deep within the earth, and that it was migrating into the aquifer. The stray gas migrating from Cabot wells was so pervasive that DEP took legal action against Cabot. Cabot acceded to a Consent Order and Agreement (COSA) that shut down all new gas operations over nine square miles of

Dimock (called the Dimock box) and that established a schedule of goals to restore or replace the Dimock residents' water supplies. These obligations remain in effect to the present.

Methane Migration

We have learned that Susquehanna County has a long history of methane in surface and ground water resulting from the normal decomposition of organic matter. This type of gas is termed "biogenic," and is sometimes informally referred to as "swamp gas." Underground gas can also be created by a different process, known as "thermogenic." Thermogenic gas results from heat and pressure, over thousands or millions of years, in deep geologic strata. Thermogenic gas is locked under thousands of feet of rock, and can only be reached by drilling down into the earth with complex industrial machinery. Biogenic gas has a different chemical identity than thermogenic gas. Because of these differences, laboratory analysis can "fingerprint" the gas as either thermogenic or biogenic.

The methane gas identified in the water contamination in Susquehanna County is by and large thermogenic gas, and has been identified as thermogenic in the testing of samples over the past ten-plus years, as the problems in Susquehanna County and the larger Marcellus Shales regions have evolved.

The Grand Jury heard testimony regarding the mechanics of methane migration from multiple witnesses. We have learned that, during the drilling process, an operator can encounter thermogenic gas pockets. Once these pockets are opened by the drill bit, the gas that was previously trapped deep in the earth suddenly has a pathway to travel. The gas will travel the path of least resistance and can ultimately find its way to drinking water aquifers. Several types of wellbore integrity issues can provide methane with a path of least resistance that allows it to travel up from deeper layers in the earth and enter into the aquifer. We learned through testimony that

most of Cabot's gas well integrity issues involve problems with the cement. Either gas flowed through the cement while it was hardening, resulting in permanent channels, or the cement just did not completely fill certain spaces between the pipe and the wellbore.

We heard testimony that, when Cabot began preliminary gas exploration in Susquehanna County, pre-drill sampling was done of homeowners' drinking water wells within a certain distance of a Cabot well pad. However, in Cabot's initial sampling of wells and groundwater in Susquehanna County, for reasons known only to Cabot management, Cabot never tested the samples for methane. Thus, although Susquehanna County water may have some history of biogenic methane contamination, Cabot's failure to test its pre-drill samples for methane eliminated the ability to establish a baseline for promptly assessing and addressing the problem of stray gas migration.

As a result, DEP did its own analysis to compensate for Cabot's failure to create a baseline. Testimony and documentary evidence before the Grand Jury examined DEP's process. DEP Program Manager (Michael) Seth Pelepko explained that DEP was able to compensate for the lack of pre-drill methane data at Cabot wells by reviewing 10,615 water samples collected by other operators in Susquehanna County who did test for baseline methane, and by reviewing Dimock area samples collected by other entities as well. These included the federal Environmental Protection Agency, the United States Agency for Toxic Substances and Disease Registry (ATSDR), Duke University scientists, and consultants engaged by area property owners. This very large sample size was then analyzed using isotopic geochemistry to compare data sets and draw conclusions as to the origin of the methane gas in the Dimock area groundwater.

As part of its analysis, DEP sampled or was provided post-drilling sample results for twelve drinking water supplies within Dimock Township, dating back to 2009, that had been infiltrated

by stray gas migrating from Cabot's gas wells. All twelve of these sampling locations demonstrated excessively high methane levels, with the highest reading being 92 mg/l, a level far exceeding the point at which the gas-filled water can explode.

We learned through testimony that, over 50 percent of the time, the concentration in the impacted water supplies was greater than 10 mg/l, the warning range for dangerous methane concentration. Importantly, the Grand Jury noted that these levels far exceed the "background" methane level in that area of the Commonwealth, as determined by DEP based on EPA and other samples. In 90% of testing, that naturally occurring background level was less than .5 mg/l. Beginning in 2013, DEP began sampling at another property found to have a water well impacted by stray gas migrating from a Cabot gas well. The results from this location also showed excessively high methane results, with the highest reading being 73 mg/l.

DEP Investigation

These concerns led to a more comprehensive effort to address the Dimock methane migration crises. We heard testimony and reviewed documents regarding the Consent Order and Settlement Agreement (COSA), noted above, that was entered between Cabot Oil & Gas and DEP on December 15, 2010. The COSA was the result of DEP's determination that eighteen drinking water supplies, serving nineteen homes in the Carter Road area in Dimock, Susquehanna County, were affected by Cabot drilling activities. DEP further determined that Cabot had not completely eliminated the discharge of natural gas, without permit, into the waters of the Commonwealth – that is, groundwater aquifers – and that the contamination was ongoing.

The COSA established a nine-square mile box that encompassed the nineteen homes with contaminated water supplies. The Order instituted a moratorium on drilling activities within the box. The Order required Cabot to restore or replace the impacted drinking water supplies, and to

undertake remedial work of its gas wells to eliminate further migration. The moratorium on drilling new wells in the box has remained in effect until the present, now ten years later.

DEP has permitted Cabot to fulfill its obligation to restore or replace impacted drinking water supplies by installing treatment systems in individual homes. Notwithstanding the expensive residential treatment systems that Cabot has installed, however, the methane migration problem from Cabot wells has not completely abated. We heard testimony that Cabot undertook little to no remedial work on its gas wells, the source of the problem, until 18 months ago, (shortly after this investigation began) when it started work on certain wells. Some of this remedial work has resulted in lower methane levels in certain drinking water wells.

As noted, we heard from DEP Program Manager Pelepko, who has played an integral role in tracing the connection between Cabot's defective gas wells and the methane that has migrated into homeowner's drinking water wells. He testified that his analysis consisted of multiple data sets demonstrating that Cabot's gas wells impacted the drinking water wells. Water samples from unaffected water wells established the background level of methane in Susquehanna County. Other samples were used for the isotopic methane analysis, which allowed experts to "fingerprint" the gas as either biogenic, thermogenic, or a mixture of both. He explained that, if "the signature looks like a deep gas that has been isolated for hundreds of millions of years, it shouldn't be there unless there is an impairment or pathway that has been opened up." That pathway, he concluded, existed because of "the way the wells were constructed in this area, the gas wells. They did not isolate the deeper gas from the aquifers."

Program Manager Pelepko uses maps to ascertain the location of the water wells in relation to Cabot's gas wells. He then determines whether methane levels in the water are remaining stable or decreasing over time. If he finds changes, he attempts to determine a connection to remedial

work done at a particular gas well. Pelepko explained the importance of distinguishing between gas dissolved into water and “headspace” gas that occupies pockets between water and earth. When efforts are made to remediate a well and cut off further migration, the headspace gas can dissipate fairly quickly. As the Grand Jury learned, however, the dissolved gas – the gas that flows into people’s wells and homes in their water – takes much longer to dissipate, often months or years.

Pelepko testified that, in addition to methane, he looks for other substances as well. He explained that these other substances may have been laying inert at the bottom of the water well, but are then stirred up by methane bubbling up through the water. He also explained that, as the methane in a water supply degrades, it can change other characteristics of the water, such as the pH.

In addition to Mr. Pelepko, we also heard from Ken Kennedy, an Oil and Gas Inspector Supervisor at DEP who has investigated integrity issues in Cabot’s gas wells. He testified that he became involved in the Dimock investigation in 2013. He explained that some wellbore integrity issues had been addressed in 2009-10, but that DEP inspections in 2011 raised questions about the integrity of additional wells. Kennedy rechecked these wells, and other wells that shared the same well pad. He explained to us the various tests performed to spot integrity issues. By 2015, he had identified 11 wells needing further evaluation. Cabot then did some of its own testing, but did not begin actively remediating any of the wells until 2018. He indicated that at least one active well, Ratzel 3V, remains problematic, and that two inactive, plugged wells, Gesford 3 and Gesford 9, are also potentially still causing migration problems.

Violations, Pre- and Post-2015

We have learned through the course of this investigation that problem wells can be divided into three separate categories: problem wells that were part of the COSA and were remediated prior to 2015; problem wells that were part of the COSA but were not remediated prior to 2015; and problem wells that are more recently drilled (and thus, not part of the COSA) that have either been remediated or are in the process of being remediated. We find that 2015 is an important dividing line because of the statute of limitations for Clean Streams Law violations. It is for that reason that we address our discussion of the wells in this manner. Due to the statute of limitations, we find that wells that fall into the first category (problem wells that were remediated prior to 2015) will not form the basis for charges.

1. Problem wells that were part of the COSA that were not remediated prior to 2015

Much has been documented about the gas wells that originally created methane migration problems in Dimock Township. Some of these wells were identified years ago, but others have become known only more recently as new problems have appeared. We learned that DEP issued a letter on June 11, 2018, that documents the history of problems associated with many of these wells.

Cabot began drilling the G Shields well pad in Dimock Township on August 14, 2009. On October 20, 2011, DEP issued a notice of violation to Cabot for gas wells G Shields 1V, G Shields 2H, G Shields 4H and G Shields 5H. The notice specified the following regulatory violations:

- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater;
- 78a81(a)3, operator conducted casing and cementing activities that failed to prevent pollution or diminution of fresh groundwater;
- 78a86, operator failed to report defect in a well that has defective, insufficient or improperly cemented casing to the Department within 24 hours of discovery, and operator

failed to correct defect or failed to submit a plan to correct the defect for approval by the Department within 30 days; and

- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

As of the June 11, 2018 letter, these violations remained outstanding.

Cabot drilled the Costello 1V and 2V and the Gesford 4H and 8H gas wells in Dimock Township beginning on July 16, 2008. On June 16, 2014, DEP issued a notice of violation to Cabot for gas wells Costello 1V, Costello 2V, Gesford 4H and Gesford 8H. The notice specified the following regulatory violations:

- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater;
- 78a81(a)3, operator conducted casing and cementing activities that failed to prevent pollution or diminution of fresh groundwater; and
- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

As of the June 11, 2018 letter, these violations remained outstanding.

Cabot drilled the Ratzel well pad in Dimock Township beginning on October 31, 2008. On December 19, 2014, DEP issued a notice of violation to Cabot for gas wells Ratzel 1H, Ratzel 2H, Ratzel 3V. The notice specified the following regulatory violations:

- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater;
- 78a81(a)3, operator conducted casing and cementing activities that failed to prevent pollution or diminution of fresh groundwater; and
- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

As of the June 11, 2018 letter, these violations remained outstanding.

Cabot began drilling at the Ely well pad in Dimock Township on March 27, 2008. On March 21, 2018 DEP issued a notice of violation to Cabot for gas wells Ely 4H and Ely 6H. The notice specified the following regulatory violations:

- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent

- migration of gas or other fluids into sources of fresh groundwater;
- 78a81(a)3, operator conducted casing and cementing activities that failed to prevent pollution or diminution of fresh groundwater;
- 78a.73(b), operator failed to prevent gas, oil, brine, completion and servicing fluids, and any other fluids or materials from below the casing seat from entering fresh groundwater, and shall otherwise prevent pollution or diminution of fresh groundwater; and
- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

As of the June 11, 2018 letter, these violations remained outstanding.

2. Problem wells that were drilled after 2015

We learned from Mr. Kennedy's testimony, and from further documentation, that certain Cabot wells that were drilled after 2015 also had integrity issues that affected drinking water supplies. While it was still addressing problems with Dimock gas wells that had been drilled in prior years, Cabot began drilling new gas wells outside the Dimock box. In 2016 Cabot drilled gas wells on the Howell well pad in Auburn Township, Susquehanna County. In 2017, the company drilled the Jeffers Farm wells in Harford Township, Susquehanna County. In 2019, Cabot drilled the POWERS M wells in Auburn Township, Susquehanna County. Shortly thereafter, problems with these newly drilled wells appeared.

The Howell gas wells 2H, 4H, 6H and 8H were the subject of two separate DEP notices of violation, on March 16, 2017 and June 20, 2017. The notices specified the following regulatory violations:

- 78a73(b), operator failed to prevent gas, oil, brine, completion and servicing fluids, and any other fluids or materials from below the casing seat from entering fresh groundwater, and shall otherwise prevent pollution or diminution of fresh groundwater;
- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater;
- 78a85(a)5, operator failed to prevent gas flow in the annulus and use gas block additives and low fluid loss slurries in areas of known shallow gas producing zones; and
- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

The Jeffers Farm gas wells 7H, 8H, 9H, 10H, 11H, 12H, and 14H were the subject of a DEP notice of violation on November 16, 2017. The notice specified the following regulatory violations:

- 78a73(b), operator failed to prevent gas, oil, brine, completion and servicing fluids, and any other fluids or materials from below the casing seat from entering fresh groundwater, and shall otherwise prevent pollution or diminution of fresh groundwater;
- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater;
- 78a85(a)5, operator failed to prevent gas flow in the annulus and use gas block additives and low fluid loss slurries in areas of known shallow gas producing zones; and
- 35 PS 691.401, discharged substance of any kind or character resulting in pollution of waters of the Commonwealth.

The POWERS M gas well 002 was the subject of a DEP notice of violation on October 18, 2019. The notice specified the following regulatory violations:

- 78a73(b), operator failed to prevent gas, oil, brine, completion and servicing fluids, and any other fluids or materials from below the casing seat from entering fresh groundwater, and shall otherwise prevent pollution or diminution of fresh groundwater;
- 78a81(a)2, operator conducted casing and cementing activities that failed to prevent migration of gas or other fluids into sources of fresh groundwater; and
- 78a81(a)3, operator conducted casing and cementing activities that failed to prevent pollution or diminution of fresh groundwater.

We learned that DEP requires a permit to discharge industrial waste into any waters of the Commonwealth. Cabot never obtained such permits for any of the well pads discussed above.

Landowner Impact

It is sometimes easy to get bogged down in the science and mechanics of methane migration and to lose sight of the reason the Legislature has chosen to impose sanctions – not just regulatory sanctions, but criminal penalties in addition to any regulatory actions – for violations of environmental law.

When a gas well has an integrity issue that allows gas to escape the wellbore, there is the possibility that the gas can then flow into the aquifer. It is this aquifer that residents living near

these well pads rely on for their water supply. The applicable statutes specifically define water pollution as contamination of any water source that is detrimental to public health, safety and welfare. Removing the supply of fresh, uncontaminated water from a home plainly causes such detriment. We heard from numerous people living in Dimock about the effects of Cabot's conduct.

Nolan Scott Ely and his extended family lived on a 183-acre farmland area in Dimock, at the northeast extremity of the state. Drilling of six wells on his property and that of family members began in 2008. Mr. Ely himself worked on many of Cabot's oil and gas well sites, building pads and setting up drilling rigs, and he had previously worked in other areas of the industry. All of the residents in this area relied on well or spring water. After the drilling started, Mr. Ely's wife began experiencing nausea and bodily blotches. Mr. Ely, as a well-site worker, assured his wife that the water could not be the cause. He had repeatedly asked his supervisor if there was any possibility that the drilling could contaminate his water. His supervisor "kept telling me, no, there is no possible way."

In the first week of January 2009, the water well of Norma Fiorentino, whose house was about a mile and a half from Mr. Ely's, exploded. Mr. Ely soon learned that his own ground water had been contaminated by methane gas. A relative who lived next door brought two jugs of tap water, drawn from their common water source. The contents was brown. When Mr. Ely applied a lighter to it, the water caught fire—"flames came flying out of the jug." He then turned on the kitchen faucet and found that he was able to set that water on fire as well. When he alerted Cabot to the problem, he was told he should leave his house because it might blow up.

Because Mr. Ely's water had become unusable, Cabot brought in a portable water tank containing 250 gallons. That was not nearly sufficient for Mr. Ely's family with three children. Testing of the well water at his house revealed "astronomical" amounts of methane, as well as

ethane, propane, excessive levels of sodium, and magnesium. Mr. Ely was also aware that “combinations of all sorts of chemicals” are used in the fracking process, including a pesticide, a teaspoon of which “will kill every living organism in a pond.” Prior to his discovery of the contamination, however, his family had been drinking the water. Mr. Ely experienced vision problems, including “tunnel vision” while driving. His wife complained of difficulty breathing and dizziness. There were rashes on her skin after coming out of the shower.

Mr. Ely was surprised by the reaction of the company – Cabot – which was not just a nearby business but his employer. “I spent a lot of time with them. I knew them. I knew them, and I worked with them to try to get them to help us out without our situation. And they just – they didn’t care. ... they weren’t really doing anything other than just bringing me water, which didn’t last very long.” The contamination of his property had more than physical and emotional effect on Mr. Ely. His land was once valued at 1.2 million dollars. It is presently valued at \$153,000.

Eric Roos lived for 29 years in Montrose, Susquehanna County, in a house with well water. A Cabot agent told him he could sign a lease to allow drilling on his land in return for some royalties; otherwise, said the agent, the company would legally be able to take what it wanted regardless. He was not told that his water could be contaminated.

After a number of wells were drilled in the area, issues with Mr. Roos’s water began. At first there were sudden, violent blasts of gas and water while his wife was doing the dishes. Soon he and his wife realized that they had to stop drinking their methane-infused well water. They began getting drinking water from a nearby public artesian well, but that required a fourteen-mile round trip. Mr. Roos contacted DEP. He was told the issue was temporary and would go away, “in a few years.” But after a decade the problem remains. Cabot provided drinking water for

approximately two years, but after DEP determined that the company need no longer do so, the water supply stopped.

After methane in the water caused the Fiorentino well head literally to explode, Cabot agreed to install a vent on Mr. Roos's well, but it was another six months before that happened. Without the vent he was in particular danger, because his well head was located inside, in his basement. That meant that toxic and explosive concentrations of methane introduced into the well water would put the entire house at risk, not just the well. In addition to the potential for explosions, the Grand Jury learned that high methane concentrations can cause asphyxiation in rooms where water is used, such as bathrooms. The water in Mr. Roos's well was also found to contain lithium, barium, manganese, and other chemicals.

At the time Mr. Roos testified in March 2019, his neighbors were still having problems with their water. Mr. Roos testified that he would like to move away, but "I don't know who will buy my house now. How can I leave?"

Another neighbor testified that she and her husband bought land in Dimock in 2003, and lived there in a trailer while they built a house that was completed in 2008. The house used well water.

Oil and gas development began in the area in 2006. Agents of Cabot told her that if she and her family allowed drilling they could "get a piece of the pie" with no disruption of their way of life. They would "never know we were here." Cabot did not disclose their preexisting plans to inundate the area with drill sites. Based on these assurances she signed a boilerplate, developer-friendly lease to allow drilling.

Beginning in February 2008 a new well was started in the area every month, the closest being only 650 feet from her house. By the late fall of 2008 she found black, oily water in her

washing machine. She later found orange water in the kitchen sink and the toilet. Her neighbors similarly reported that their water was changing color.

In January 2009, the Fiorentino well exploded. Testing revealed high methane concentrations in her own well water, and DEP advised residents to vent their wells to avoid further explosions, including explosions inside the house. She testified that she and her family had to buy water because the water from their well was no longer fit to drink. They had to install various filters in order to use the well water for washing, and have not been able to drink their own water for ten years. In April 2010 a test of her well water revealed the presence of ethylene glycol, propylene glycol, and two other unidentified chemicals. When coming out of the tap, the water would foam with “an Alka Seltzer consistency,” smelled like turpentine, and left behind a “black slime.” In 2012 water testing showed manganese at twice the state limit, and a high level of lithium. A 2018 test found arsenic, lead, sodium, uranium, lithium and propane. Cabot representatives told her the arsenic in her well water must have come from “apple orchards.”

Many other neighbors in the area described similar changes to their water’s color, taste, smell, or appearance, and an Alka-Seltzer-like bubbling. Some described, as had Ms. Ely, explosive bursts so great they could blow a plate out of a person’s hand while washing dishes. Many of the neighbors experienced rashes and other skin problems that they hadn’t suffered before the drilling began. All of these residents related the frustration and anxiety of trying to get answers from the company. Cabot continued to deny responsibility, and for many years declined to remedy the wellbore integrity issues in its gas wells.

Applicable Environmental Statutes

We have learned much over the course of this investigation about the environmental statutes that govern the illegal conduct exhibited by Cabot. The Clean Streams Law defines “industrial waste” as any liquid, gas or solid resulting from manufacturing or industry, whether or not generally characterized as waste. “Pollution” is any contamination of waters of the Commonwealth that is likely to render those waters harmful, detrimental, or injurious to public health, safety or welfare, or to legitimate beneficial use. “Waters of the Commonwealth” includes any rivers, streams, rivulets, lakes or springs containing surface or underground water.

The Clean Streams Law also contains many criminal provisions pertinent to this investigation. Section 691.301 makes it a crime to discharge industrial waste into the waters of the Commonwealth. Section 691.401 makes it a crime to permit the discharge into the waters of the Commonwealth of any substance of any kind that results in pollution. Section 691.611 provides, in relevant part, that it is a crime to fail to comply with any rule or regulation of the DEP or to fail to comply with any order or permit or license of the DEP; to violate any of the provisions of Clean Streams Law; to violate any order or permit or license of DEP; or, to cause air or water pollution.

Conclusion

We find that, over a period of many years, and despite mounting evidence, Cabot Oil & Gas failed to acknowledge and correct conduct that polluted Pennsylvania water through stray gas migration. Indeed, some of these gas wells have been in place for more than a decade, yet Cabot has only recently taken steps to remediate them. In light of Cabot’s long-term indifference to the

damage it caused to the environment and citizens of Susquehanna County, these were not merely technical violations. We conclude that criminal charges are appropriate.