

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

WAYNE LAND AND MINERAL GROUP LLC

Plaintiff,

v.

No. 3 :16-cv-00897-RDM

Hon. Robert D. Mariani

DELAWARE RIVER BASIN COMMISSION,

Defendant

and

DELAWARE RIVERKEEPER NETWORK,

MAYA K. VAN ROSSUM, THE DELAWARE
RIVERKEEPER,

Intervenors-Defendants.

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EXHIBIT 1

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DELAWARE RIVER BASIN COMMISSION,

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DELAWARE RIVERKEEPER NETWORK,
MAYA K. VAN ROSSUM, THE DELAWARE
RIVERKEEPER,

Intervenors-Defendants,

and

DAMASCUS CITIZENS FOR
SUSTAINABILITY, INC.

Proposed Intervenor-Defendant

Declaration of Barbara Arrindell

Pursuant to 28 U.S.C. Sec.1746, I, Barbara Arrindell, declare under oath as follows:

1. My name is Barbara Arrindell.
2. I am the Director of Damascus Citizens for Sustainability, Inc., (DCS).
3. DCS is a non-profit 501(c)(3) grass roots citizens group focused on protection of public health and the environment from pollution caused by oil and gas

development using hydraulic fracturing and horizontal drilling and production and related activities and infrastructure. For purposes of this declaration I will refer to this entire development process as “fracking.”

4. Many of DCS’s 5000 members live, work, have interests in, and recreate in the Delaware River Basin. Millions of others, such as residents of New York City and Philadelphia, use water from the Basin. DCS and its members rely on the Delaware River Basin Compact and its implementation by the Delaware River Basin Commission to review and regulate any and all projects that may have an adverse effect on the waters of the Basin and, by extension, public health and the health of the environment of the Basin.
5. Since its inception in 2008 DCS has seen a growing number of cases where individuals and communities outside the Delaware River Basin have suffered serious health impacts from pollution caused by fracking near their homes and communities or upstream from them. DCS and its members are very concerned that similar types of fracking impacts would occur in the Basin if these activities are determined to be beyond the control of DRBC.
6. One such case involves a young couple and their two children living in Hickory PA in the southwestern area of the Commonwealth. Their home was located where adjacent fracking production and processing facilities gradually encroached. Their water supply was contaminated several years after they built their “dream” house. They had to install a potable water tank system located in the garage of their home and pay for the water they had delivered.

7. Their children had developed breathing difficulties, stomach ailments, headaches and rashes so bad that they had to move out. After they moved out symptoms mostly subsided. However, whenever they went back to their house the children would almost immediately have symptoms similar to those they had when they were still living in the house. Eventually the gas company settled with the family but they were forced to agree to not disclose anything about the case or the settlement. The trauma will be with them forever.
8. Another case of adverse health impacts at fracking sites in Pennsylvania outside the Delaware River Basin involves a couple in their 40s living in Clearville in the southern portion of central PA. Over several years fracking facilities including fracked gas wells gas storage facilities and compressor stations surrounded them. Both of them developed significant adverse health effects, including liver, brain and breathing problems. Testing by University of Pittsburgh toxicologists identified several heavy metals and numerous chlorinated organic compounds in their bloodstream. Within a short period of time a number of cows, dogs and a horse died and several calves were still born.
9. A cluster of families living in Dimock, PA, developed a variety of health impacts from contamination caused by nearby fracking activity. This is an area certified as damaged by PADEP who issued two orders to Cabot Oil and Gas Company to correct the gas migration happening in a 9 square mile area. Corrections have still not been made, there is continuing gas migration.

10. Right to Know requests to the Pennsylvania Department of Environmental Protection (PADEP) regarding contamination of private and public water supplies recently produced approximately 300 letters in which PADEP confirmed that fracking has contaminated the water supply for the property in question. Due to the moratorium on shale gas development applied by the executive director of DRBC for the Delaware River Basin (DRB), none of these determination letters involved properties in the DRB.
11. A focus of DCS' education and advocacy has always been the health impacts of fracking. In 2008 and 2009 we submitted thousands of petitions to DRBC to look at the health, environmental and cumulative impacts of the totality of the drilling, processing, infrastructure, etc that would happen within the Basin if drilling was allowed. We wanted these impacts studied before drawing up regulations to allow the processes.
12. More recently DCS has designed a Survey for people impacted by fracking that is submitted to the Agency for Toxic Substances and Disease Registry (ATSDR) within the Centers for Disease Control. DCS developed this comprehensive survey process to identify and respond to cases in which unconventional oil and gas development has compromised a person's health. Completed surveys have been submitted to ATSDR by close to 50 households in 20 communities. DCS will be monitoring these cases as it submits more.
13. One of DCS' steering committee members (since 2009), Dr. Larysa Dryszka is a retired board certified pediatrician, who practiced in New Jersey and is now living in New

York in the Delaware Basin. Most of her work is focused on health effects from fracking. Dr. Dryzka has devoted extensive efforts in connection with the Compendium of Scientific, Medical and Media Findings Demonstrating Risks and Harms from Fracking (the Compendium) recently published in its fourth edition as an open access document housed on the websites of Concerned Health Professionals of New York and Physicians for Social Responsibility. It can be found at www.concernedhealthny.org or www.psr.org The most recent fourth edition of the Compendium has over 900 entries each of which relates to adverse health effects from fracking and associated activities and processes. DCS also decided to seek intervention because an interpretation of the Compact that unconventional oil and gas development is not subject to Project review under Article 3.8 could arguably be interpreted to make any and every location within the Delaware River Basin open to such development. This could place everywhere within the Basin at risk of contamination that is associated with unconventional gas development. This would place at risk not only the major public water supply systems for New York City, Philadelphia, Wilmington and related locations, but also every private water supply well in the Basin. The damage to DCS and its members as well as others using waters of the Basin could be catastrophic.

14. DCS decided to move to intervene in the WLMG v. DRBC case to assure that the full range of impacts to waters of the Basin that will be caused by fracking and the adverse health effects that result from these water impacts are brought before the Court as it reviews the legal arguments related to the Compact and DRBC's project review process.

15. DCS also decided to seek intervention because an interpretation of the Compact that fracking activities or the gas well pads where the wells are located is not subject to Project review under Article 3.8 could arguably be interpreted to make any and every location within the Delaware River Basin open to such development. This could place everywhere within the Basin at risk of contamination that is associated with fracked gas development. This would place at risk not only the major public water supply systems for New York City, Philadelphia, areas of New Jersey and Wilmington, Delaware and related locations, but also every private water supply well in the Basin. The damage to DCS and its members as well as others using waters of the Basin could be catastrophic.

I declare under penalty of perjury that the foregoing is true and correct.

Executed December 1, 2016

/s/Barbara Arrindell.

EXHIBIT 2A Determination letter example Nicholson Twp MAR2012



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DISTRICT OIL & GAS OPERATIONS

March 2, 2012

CERTIFIED MAIL NO. 7011 2970 0002 9461 4760

Re: Act 223, Section 208 Determination
Complaint ID 286302
Nicholson Township, Wyoming County

Dear :

The Department has investigated the possible degradation of your water supply well located at Nicholson Township, Wyoming County, in response to a report that recent gas well drilling activities may have affected your water well.

On 12/9/2011, the Department collected samples from your water supply. The samples were submitted to the Department's laboratory in Harrisburg for analysis. The sample results showed methane was present at 21.100 milligrams per liter (mg/l) in your water supply. In addition, ethane was detected at 0.931 mg/L and propane was detected at 0.183 mg/l. The Department's investigation indicates that gas well drilling has impacted your water supply.

Methane is the predominant component of natural gas. Federal water standard limitations have not been established for methane gas. The level of concern begins above 28 mg/l methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional methane in solution. This may allow the gas to come out of the water and concentrate in the air space of your home or building. There is a physical danger of fire or explosion due to the migration of natural gas into water wells or through soils into dwellings where it could be ignited by sources that are present in most homes/buildings. Natural gas can also cause a threat of asphyxiation, although this is extremely rare.

When the Department is made aware of methane levels greater than 7 mg/l, we notify the water supply owner of the hazards associated with methane in their water supply. Please be aware however, that the methane levels can fluctuate. This means that even with a relatively low level of methane, you should be vigilant of changes in your water that could indicate an increase in methane concentration.

It is the Department's recommendation that all water wells should be equipped with a working vent. This will help alleviate the possibility of concentrating these gases in areas where ignition

March 2, 2012

would pose a threat to life or property. Please note that it is not possible to completely eliminate the hazards of having natural gas in your water supply by simply venting your well.

The Department is continuing to work to permanently resolve this issue. Should you have any questions concerning this matter, please feel free to contact Eric Rooney at 570-346-5543.

Sincerely,



Jennifer W. Means
Environmental Program Manager
Oil and Gas Management

Enclosures:
Laboratory Analytical Results
"How to Interpret A Water Analysis Report"

cc:
Jennifer Means
Marc B. Cooley
William J. Kosmer, P.G.
Eric Rooney
Matthew Shope
Complaint File
File

March 2, 2012

Bcc:
Chief

EXHIBIT 2B FLOODS AND FRACKING -SOME EXAMPLES



IS THERE A MEDIA BLACKOUT ON THE FRACKING FLOOD DISASTER IN COLORADO?

September 15, 2013 By TXsharon



Please sign this **PETITION** to enact an immediate moratorium on fracking in Colorado.

LOOK → Please go see this new, post with shocking photos, video and a message for residents in the middle of the fracking flood zone.

I will update this post as residents send me pictures and video.

We need the national news stations to go cover the environmental disaster that's happening in Colorado right now.

This picture taken by a resident is from yesterday.

Together we can make the world a frack-free place.

Sign up to receive my posts in your inbox.

first name

email

SIGN ME UP!

STALK TXSHARON



RECENT POSTS

Hello from Camp Toyahvale
PROTECT 30 billion gallons of Texas Water Doomed Fracking Trash

Guess who pays Apache Corp to frack Balmorhea
Earthworks damn good report!
Cocktails for Survival is out.
Make drinking great again!
Whatever happened to Frack Master Chris Faulkner?

 *Click here to sign up for email updates*
EARTHWORKS

LIKE EARTHWORKS ON



From an email.

I see you've noticed the underwater wells in Weld County, Colorado. Amazing; we've emailed the Denver TV stations, other media, and state and local politicians. We've sent pictures that our members have taken. It's like the media and politicians have been TOLD not to say anything about it. There has been no mention of the gas wells on the Denver newscasts either last night or this evening although all stations have had extensive and extended flood coverage. You can see underwater wells in the background of some of the newscast videos, and yet the reporters say absolutely nothing.

Here's a picture one of our members took yesterday in Weld County, Colorado. We've got tons more on our website. Check it out. The tanks are tipping and, in some cases, have fallen over. They have to be leaking toxins into the flood waters. There have to be hundreds if not thousands of underwater well pads in Weld County as a result of the flooding.

Please publicize this in Texas since our media people and politicians have gone silent!


<https://www.facebook.com/EastBoulderCountyUnited>

East Boulder County United

Lafayette, Colorado

Post from yesterday shows leaking tank floating down the river.

FACEBOOK

 Like 109K people like this. [Sign Up](#) to see what your friends like.

CATEGORIES

Categories

ARCHIVES

Archives



UPDATE: The locals are very busy right now taking calls from the media. So far no calls from the local media though. Last I heard it is continuing to rain.

They reported to EPA emergency under report number 1060249.

UPDATE: You can see more photos [HERE](#). Another tank overturned and a fracking chemical warehouse that was flooded. I did not take the photos.

UPDATE: From the [Daily Camera](#):

Regulators say they agree these well sites could pose a contamination risk, and they will get out to assess the damage as soon as it's feasible.

[...]

Lafayette-based anti-fracking activist Cliff Willmeng said he spent two days “zig-zagging” across Weld and Boulder counties documenting flooded drilling sites, mostly along the drainageway of the St. Vrain River. He observed “hundreds” of wells that were inundated. He also saw many condensate tanks that hold waste material from fracking at odd angles or even overturned.

“It’s clear that the density of the oil and gas activity there did not respect where the water would go,” Willmeng said. “What we immediately need to know is what is leaking and we need a full detailed report of what that is. This is washing across agricultural land and into the waterways. Now we have to discuss what type of exposure the human population is going to have to suffer through.”

A spokesman for the Colorado Oil and Gas Conservation Commission said the agency is aware of the potential for contamination from flooded drilling sites, but there simply is no way to get to those sites while flooding is ongoing and while resources are concentrated on saving lives.

Apparently all sides agree that there is a contamination risk. So I hope the industry apologists will, at least, stop using my bandwidth trying to convince us otherwise.

UPDATE REGARDING COMMENTS: ~~From here on out, if your comment doesn't add something to the conversation, it won't be posted. There are plenty of comments already saying the same ignorant things so we don't need any more repeats.~~

Edit: I couldn't do it. As far as I know I have allowed all the comments even those calling me names but they are coming in very fast and I do have other things to do. Please keep your comment clean because there are children who read this blog. I don't think the industry is doing itself any favors here in the comments.

- We already know that some people love the oil and gas industry, cancer and all, because the jobs pay well and you need to put "food on your families."
- We already know that some people see no other way to power their lives than to use oil and gas.
- We already know that many of you think I am
 - misguided
 - need educating by the oil & gas industry
 - meddling (despite the fact I was asked to post this)
 - don't know what a question mark means

But here's the deal, people: I pay for this bandwidth and I spent most of my day yesterday allowing your crazy comments. Enough is enough. I'm not wasting my bandwidth for you to place, essentially the same comments over and over.

Thanks

UPDATE: From an email:

There are several members of the Vermont Governor's administration flying to Colorado as we speak to help in the rebuilding of infrastructure after flooding as we had to do after Irene. Being a mountainous state as Colorado is and being a victim of severe and isolating flooding as Colorado is, the Colorado Governor requested our help. If the Colorado people ask for their help in ENVIRONMENTAL ISSUES, perhaps they might have better luck with people from one of the most ENVIRONMENTALLY SAFE STATES in the country. Hopefully, they will not shy away also from the issue because of money, politics and fear

UPDATE: **An email from Weld County residents:**

Hi Sharon,

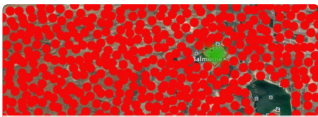
To circle back, activists here have been contacted by Bloomberg, the Weather Channel, NPR, the BBC and Al Jazeera....so far. Thanks so much for your help.

The pictures are all over the web and getting picked up by all sorts of media, and we're being contacted by more and more people.

I think the local CBS affiliate in Denver finally did some filming this morning with one of our members—very late to the party. Others have totally avoided the issue like they've been told not to report on it. Meanwhile, more and more pictures are coming in of damaged well pads and floating tanks



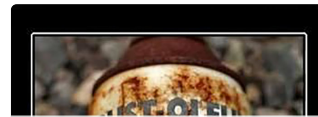
You may also like:



Apache Corp fracking generosity in Balmorhea



PROTECT 30 billion gallons of Texas Water Doomed Fracking Trash



Guess who pays Apache Corp to frack Balmorhea

rogers @brianjrogers · 1h
w it's supposed to be damning, but this report reads o for @sierraclub, @Earthworks, @PublicCitizenTX &

f for Natural Gas @NTXforNatGas
d the report exposing the campaign to shut down oil and na
Lower Star State.

Earthworks damn good report!



Whatever Happened to Frack Master Chris Faulkner?



FBI seizes Chris Faulkner aka Frack Master fancy cars



ABOUT SHARON WILSON

Sharon Wilson is considered a leading citizen expert on the impacts of shale oil and gas extraction. She is the go-to person whether it's top EPA officials from D.C., national and international news networks, or residents facing the shock of eminent domain and the devastating environmental effects of natural gas development in their backyards.

[Mail](#) | [Web](#) | [More Posts \(5101\)](#)

Filed Under: [Uncategorized](#)

Comments

[Sue Heavenrich](#) says

September 15, 2013 at 10:33 am

I just posted an update on my blog with link to this post for "Updates"
Keep up the excellent work,





Flooded well pad next to Wyalusing Creek
Stone Energy
January 26, 2010
Photo: Susquehanna River Sentinel

February 18, 2010
Press Release

CBF and TU Call for Ban on Marcellus Gas Wells in Floodplains

Hydrofracking in Floodplains is an Environmental Disaster Waiting to Happen

(HARRISBURG, PA)—In the rush to develop the Marcellus shale formation in Pennsylvania, natural gas wells are being permitted and drilled in floodplains. Two such wells, one operated by Stone Energy along Wyalusing Creek in Rush Township, Susquehanna County, and one operated by XTO along Muncy Creek in Shrewsbury Township, Lycoming County are already experienced flooding events. The Chesapeake Bay Foundation (CBF) and Trout Unlimited (TU) call upon the Pennsylvania Department of Environmental Protection (DEP) to remedy this clear environmental and public health hazard.

"The handling of fracking chemicals and highly contaminated drilling wastewater in floodplains is an environmental disaster waiting to happen. It has to stop," said Matt Ehrhart, Executive Director of CBF's Pennsylvania Office. "Permitting well pads in floodplains causes a very serious threat of pollution. We call upon DEP to use its authority under the Clean Streams Law to order the companies operating these wells to permanently cap and abandon them, and then reclaim the sites to their natural condition."

While current regulations do not allow well pads to be located within 100 feet of streams or within the floodway without an encroachment permit, neither the Pennsylvania Oil and Gas Act nor its regulations prohibit siting wells in floodplains. Because horizontal drilling technology is used to drill into Marcellus shale, the gas underneath streams and floodplains can easily be accessed from a pad location in an upland area, avoiding risk of flooding and catastrophic pollution to Pennsylvania's rivers and streams. There is no reason to site wells in floodplains.

"This loophole must be closed immediately," said Dave Rothrock, President of the Pennsylvania Council of Trout Unlimited.

In late January, heavy rains hit northern Pennsylvania and several streams and rivers experienced flooding events, including Wyalusing and Muncy Creeks. Both the Stone Energy and the XTO sites were flooded as a result of these events.

"The risk of pollution to our streams will increase exponentially in a matter of weeks," said Rothrock. "As we head into the season of snowmelt and spring rains, there should be absolutely no more well drilling activity in floodplains anywhere in Pennsylvania."

The Stone Energy site was permitted along Wyalusing Creek by DEP without the necessary encroachment permits. While DEP issued a notice of violation to the company the week before the flood, the agency should have never issued the well drilling permit in the first place. CBF has previously highlighted serious flaws in the fast track permitting process implemented by DEP since April 2009, where permit applications do not receive careful environmental review but are instead pushed quickly out the door.

In August 2009, CBF appealed three erosion and sediment control permits issued by DEP for drilling sites in Tioga County. CBF's appeals resulted in a DEP

review of the plans and revocation of all three permits because of serious deficiencies.

"The Stone Energy site is yet another example of permits being issued without the necessary review," said Ehrhart. "DEP should not have issued a drilling permit that close to the creek, plain and simple. If the agency was spending any time looking at the proposed location, it would have known that."

Governor Rendell recently announced plans to hire 68 new DEP staff to bolster inspection and environmental compliance as Marcellus shale development expands, and DEP announced plans to open a new regional office in Scranton to increase its presence in the northeast, where much drilling is already taking place.

"We are glad Pennsylvania has taken these actions," said Ehrhart. "We hope that DEP will take advantage of these new staff and resources to ensure more careful review of permits."

Credit: Don Williams
[Susquehanna River Sentinel](#)

[A History of Flooding in the Susquehanna River Basin](#)

The Bradford Era

Scientists predict increased rain, floods for state

By WALTER BRASCH Jun 25, 2014



Flooded well pad in Towanda, PA, September 2011

Pennsylvanians will experience increased rainfall and floods if data analysis by a Penn State meteorologist and long-term projections by a fisheries biologist, with a specialty in surface water pollution, are accurate.

Paul Knight, senior lecturer in meteorology at Penn State, compiled rainfall data for Pennsylvania from 1895 — when recordings were first made — to this year. He says there has been an increase of 10

percent of rainfall during the past century. Until the 1970s, the average rainfall throughout the state was about 42 inches. Beginning in the 1970s, the average began creeping up. “By the 1990s, the increase was noticeable,” he says. The three wettest years on record since 1895 were 2003, 2004, and 2011. The statewide average was 61.5 inches in 2011, the year of Tropical Storm Lee, which caused 18 deaths and about \$1.6 billion in damage in Alabama, Louisiana, Mississippi, and Texas, and devastating flooding in New York and Pennsylvania, especially along the Susquehanna River basin. Dr. Harvey Katz, of Montoursville, extended Knight’s data analysis for five decades. Dr. Katz predicts an average annual rainfall of about 55 inches, about 13 inches more than the period of 1895 to 1975. The increased rainfall isn’t limited to Pennsylvania, but extends throughout the Mid-Atlantic and New England states.

Both Knight and Dr. Katz say floods will be more frequent. The industrialization and urbanization of America has led to more trees being cut down; the consequences are greater erosion and more open areas to allow rainwater to flow into streams and rivers. Waterway hazards, because of flooding and increased river flow, will cause additional problems. Heavy rains will cause increased pollution, washing off fertilizer on farmlands into the surface water supply, extending into the Chesapeake Bay. Sprays on plants and agricultural crops to reduce attacks by numerous insects, which would normally stay localized, will now be washed into streams and rivers, says Knight.

Pollution will also disrupt the aquatic ecosystem, likely leading to a decrease in the fishing industry because of increased disease and death among fish and other marine mammals, says Dr. Katz.

Another consequence of increased rainfall is a wider spread of pollution from fracking operations, especially in the Marcellus Shale. Most of the 1,000 chemicals that can be used in drilling operations, in the concentrations used, are toxic carcinogens; because of various geological factors, each company using horizontal fracturing can use a mixture of dozens of those chemicals at any one well site to drill as much as two miles deep into the earth.

Last year, drilling companies created more than 300 billion gallons of flowback from fracking operations in the United States. (Each well requires an average of 3-5 million gallons of water, up to 100,000 gallons of chemicals, and as much as 10 tons of silica sand. Flowback is what is brought up after the initial destruction of the shale.) Most of that flowback, which once was placed in open air pits lined with plastic that can tear and leak, are now primarily placed into 22,000 gallon steel trailers, which can leak. In Pennsylvania, drillers are still allowed to mix up to 10 percent of the volume of large freshwater pits with flowback water.

In March 2013, Carizo Oil and Gas was responsible for an accidental spill of 227,000 gallons of wastewater, leading to the evacuation of four homes in Wyoming County. Two months later, a malfunction at a well, also in Wyoming County, sent 9,000 gallons of flowback onto the farm and into the basement of a nearby resident.

Rain, snow, and wind in the case of a spill can move that toxic soup into groundwater, streams, and rivers. In addition to any of dozens of toxic salts, metals, and dissolvable organic chemicals, flowback contains radioactive elements brought up from deep in the earth; among them are Uranium-238, Thorium-232, and radium, which decays into radon, one of the most radioactive and toxic gases. Radon is the second highest cause of lung cancer, after cigarettes, according to the Environmental Protection Agency.

A U.S. Geological Survey of well samples collected in Pennsylvania and New York between 2009 and 2011 revealed that 37 of the 52 samples had Radium-226 and Radium-228 levels that were 242 times higher than the standard for drinking water. One sample, from Tioga County, was 3,609 times the federal standard for safe drinking water, and 300 times the federal industrial standard.

Radium-226, 200 times higher than acceptable background levels, was detected in Blacklick Creek, a 30-mile long tributary of the Conemaugh River near Johnstown. The radium, which had been embedded deep in the earth but was brought up in flowback waters, was part of a discharge from the Josephine Brine Treatment Facility, according to

research published in the peer-reviewed journal Environmental Science & Technology.

Increased rainfall also increases the probability of pollution from spills from the nation's decaying pipeline systems. About half of all oil and gas pipelines are at least a half-century old. There were more than 6,000 spills from pipelines last year. Among those spills were 300,000 gallons of heavy Canadian crude oil from a pipe in Arkansas, and 100,000 gallons of oil and other chemicals in Colorado.

Increased truck and train traffic to move oil and gas from the drilling fields to refineries along the Atlantic and Gulf coasts has led to increased accidents. Railroad accidents in the United States last year accounted for about 1.15 million gallons of spilled crude oil, more than all spills in the 40 years since the federal government began collecting data, according to the Pipeline and Hazardous Materials Safety Administration. Many of the spills were in wetlands or into groundwater and streams.

A primary reason for increased rainfall (as well as increases in hurricanes, tornadoes, ocean water rises, and other long-term weather phenomenon) is because of man-made climate change, the result of increased carbon dioxide from fossil fuel extraction and burning. It's not a myth. It's not a far-fetched liberal hoax invented by Al Gore. About 97 percent of the world's climate scientists agree we are experiencing climate change, and that the world is at a critical change; if the steady and predictable increase in climate change, which affects the protection of the ozone layer, is not reduced within two decades, it will not be reversible. Increased rainfall and pollution will be only a part of the global meltdown.

Brasch can be reached at brasch@walterbrasch.com.

EXHIBIT 2C - Hallowich Family Saga

Marcellus shale drilling a concern

By Amy Crawford

TRIBUNE-REVIEW

Thursday, May 6, 2010

When the Hallowich family moved to Washington County to build their dream home in 2007, they did not anticipate the impact that Marcellus shale gas drilling would have on their lives.

"It's not the pretty pictures they show you, and the reclaimed sites and the people who've made their millions," said Stephanie Hallowich. "My kids can't go outside and play."

At a public meeting organized by Murrysville Council last night, Hallowich spoke to more than 50 residents about the so-called darker side of that Marcellus shale.

The mineral rights were leased when she and her husband bought their property, near the community of Hickory in Mt. Pleasant Township. Their neighbors also had signed drilling leases, and soon the Hallowiches found themselves surrounded by four gas wells, a compression station, pipelines and a large holding pond containing polluted water.

The water, Hallowich said, had seeped into their well, making it unsafe to drink. Chemicals apparently escaped into the air, she said, and the family experiences burning eyes and throats.

"Every time I put my kids in the shower, they inhaled it," she told the Murrysville residents, adding that she now pays for bottled water to be trucked to her home.

Murrysville Council organized the meeting as a follow-up to a presentation by a gas-drilling company in April.

Range Resources, with regional headquarters in Canonsburg, has applied for permits to drill in Murrysville, at Logans Ferry Road and Route 380. Gas companies also have approached residents about drilling on their property.

"We want you, who are being contacted by gas companies, to do your homework first," said Council President Joan Kearns. "This is an ongoing process to learn more about the Marcellus shale operation."

Murrysville residents Jeff and Debbie O'Connor said they had been approached by a gas company that wanted to build a well on their acre of property. After last night's presentations, they said they were disinclined to sign a lease.

"They promise you the moon," Jeff O'Connor said. "We were curious."

"We were open-minded," Debbie said. "The salesman sounded convincing. But after hearing all these speakers, we're getting firsthand knowledge."

###

Illustrations added to above article



Here's the dream home Stephanie and her husband built in the country.



IN THE
SUPERIOR COURT OF PENNSYLVANIA
WESTERN DISTRICT

Nos. 234 WDA 2012, 235 WDA 2012

STEPHANIE HALLOWICH AND CHRIS HALLOWICH, H/W

V.

RANGE RESOURCES CORPORATION, WILLIAMS GAS/LAUREL MOUNTAIN
MIDSTREAM, MARKWEST ENERGY PARTNERS, L.P., MARKWEST ENERGY
GROUP, LLC AND PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL
PROTECTION

APPEAL OF: OBSERVER PUBLISHING COMPANY D/B/A OBSERVER-REPORTER
AND PG PUBLISHING COMPANY, PROPOSED INTERVENORS

*On appeal from an Order dated January 31, 2012, denying a motion to intervene and
motion to unseal the record, by the Hon. Paul Pozonsky, in the Court of Common
Pleas for Washington County, in Docket No. C-63-CV-201003954.*

BRIEF OF *AMICI CURIAE* PHILADELPHIA PHYSICIANS FOR SOCIAL
RESPONSIBILITY; PHYSICIANS, SCIENTISTS, AND ENGINEERS FOR HEALTHY
ENERGY; DR. BERNARD D. GOLDSTEIN; DR. WALTER TSOU; DR. JEROME A.
PAULSON; DR. WILLIAM ROM; DR. MEHERNOSH P. KHAN; DR. SANDRA
STEINGRABER; DR. SIMONA PERRY; DR. ROBERT OSWALD; DR. MICHELLE
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SUPERIOR COURT OF PENNSYLVANIA

Nos. 234 WDA 2012, 235 WDA 2012

STEPHANIE HALLOWICH AND CHRIS HALLOWICH, H/W

v.

RANGE RESOURCES CORPORATION, WILLIAMS GAS/LAUREL MOUNTAIN
MIDSTREAM, MARKWEST ENERGY PARTNERS, L.P., MARKWEST ENERGY
GROUP, LLC AND PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL
PROTECTION

APPEAL OF: OBSERVER PUBLISHING COMPANY D/B/A OBSERVER-REPORTER AND
PG PUBLISHING COMPANY, PROPOSED INTERVENORS

Brief of Amici Curiae

PRELIMINARY STATEMENT

When Stephanie and Chris Hallowich moved their family to a farm in Mount Pleasant, they thought they had found their dream home. Instead, their home was soon surrounded by the expanding natural gas industry, as companies built wells on their property and gas processing facilities nearby. The health of the Hallowich parents and children quickly deteriorated.

The Hallowich family tried to get the attention of state regulators, spoke with media, and communicated with the gas companies. Yet the gas operations continued, and the family's health declined. The Hallowich family had no recourse but to file a lawsuit, settle, and abandon their property. The very companies that essentially forced the Hallowich family from their home persuaded the court below to close a court proceeding and seal the court record, depriving the public of any information in the record that could help to protect other similarly situated families.

The circumstances that gave rise to the Hallowich case are occurring throughout Pennsylvania and other states. As shale gas development expands around the country, more

people are exposed to unconventional gas operations that can contaminate drinking water and pollute the air, with serious health effects. To understand and prevent these health risks, physicians and public health professionals need more information. Unfortunately, at the very moment that more people are being exposed to gas operations that can potentially cause health problems, and at the very moment that the medical community insists that it needs more information, the gas industry routinely impedes the collection and dissemination of information relevant to the industry's impact on public health.

Governing precedents do not support sealing the court record and precluding public access to information that may relate to the health effects of gas operations. The gas companies' interest in secrecy must yield to the greater social good of disclosing information relevant to public health and safety. Moreover, no Pennsylvania court has ever held that court records may be sealed based on nothing more than the interest in using confidentiality to promote settlements. Accordingly, *Amici* urge this Court to reverse the Court of Common Pleas and grant the newspapers' joint motion to unseal the record.¹

INTERESTS OF *AMICI CURIAE*

Amici are Philadelphia Physicians for Social Responsibility; Physicians, Scientists, and Engineers for Healthy Energy; Dr. Bernard D. Goldstein; Dr. Walter Tsou; Dr. Jerome A. Paulson; Dr. Willaim Rom; Dr. Mehernosh P. Khan; Dr. Sandra Steingraber; Dr. Simona Perry;

¹ *Amici* will not address the newspapers' appeal of the denial of their petition to intervene, except to note that both Pennsylvania and Third Circuit courts have allowed media companies to intervene to unseal a record when such a motion was filed after the sealing of the record and dismissal of the case. *See Beaver v. McColgan*, 11 Pa. D. & C.4th 97, 98 (Columbia Cnty. 1990) (granting a petition to intervene filed four weeks after the court approved a settlement agreement and approved a petition to seal the court record); *see also Pansy v. Borough of Stroudsburg*, 23 F.3d 772, 780 (3d Cir. 1994) ("In the instant case, there was only a six and one-half month delay between the time of settlement and the motion for intervention. This relatively short delay, in itself, leads us to the conclusion that intervention should be permitted.").

Dr. Robert Oswald; Dr. Michelle Bamberger; Kathryn Vennie; and Earthworks. Their individual statements of interest are attached as Exhibit A. *Amici* represent healthcare professionals, research scientists, engineers, and members of an organization actively working to protect public health from the impacts of oil and gas development. Some *Amici* have extensive experience producing independent research on the natural gas industry; other *Amici* are healthcare providers and may treat patients concerned about possible health effects from natural gas operations. Despite their different professions, *Amici* share the belief that each of their fields needs more information on the natural gas industry in order to properly assess the impacts of natural gas development. *Amici* are concerned about the use of various laws and litigation tactics to impede the development of information on the industry. To counteract this trend, *Amici* support greater disclosure of information regarding natural gas operations and their health impacts. Since *Amici* believe that there is insufficient information regarding the health effects of gas development, and unsealing the record in this case would improve transparency about gas operations and their health effects, *Amici* urge this Court to grant the newspapers' joint motion to unseal the record.

BACKGROUND

I. The Hallowich Family

Stephanie and Chris Hallowich built what they thought would be their dream home in Mount Pleasant Township.² They soon found themselves caught in the middle of Marcellus Shale gas development, as companies drilled wells on their property and operated gas processing facilities nearby.³ The health of both the Hallowich parents and children deteriorated as they began suffering a range of symptoms, including headaches, nosebleeds, burning eyes, and sore

² See Marianne Lavelle, *A Dream Dashed By the Rush on Gas*, Nat'l Geographic Daily News, Oct. 17, 2010, at 2.

³ When Stephanie and Chris Hallowich moved onto the property, they did not understand that the prior owner had leased the mineral rights. *Id.*

throats.⁴ After trying unsuccessfully to resolve their problems by contacting the natural gas companies and state regulators, the Hallowich family had no other recourse than to file a lawsuit, settle, and leave their property behind. The very companies that made their property unlivable now seek to deny the public access to records that could help other similarly situated families.

II. Like the Hallowich Family, Many People in Pennsylvania and throughout the Nation Are Exposed to Shale Gas Development.

The Marcellus shale deposit, estimated to be one of the largest known deposits of natural gas in the world, lies underneath Pennsylvania and other Northeastern states.⁵

Development of the Marcellus shale has increased exponentially in the last several years, especially in southwestern Pennsylvania, where the Hallowich family lived during the time periods relevant to this case. According to a study published by the Pennsylvania State University, between the first quarter of 2009 and the fourth quarter of 2010, the number of horizontal wells drilled increased over 600% and the number of wells in production increased over 200% in Pennsylvania.⁶ The boom in drilling for unconventional gas in Pennsylvania is part of a national trend: in 2001, unconventional gas was less than 2% of total domestic natural

⁴ See Janelle Hall, *Explosion Reports Send Crews to Washington Co. Gas Well Site: Range Resources Says Smoke Spotted at Compressor Station*, WTAE.com Pittsburgh (Mar. 1, 2011), <http://www.wtae.com/r-video/27044037/detail.html>; Lavelle, *supra* note 2, at 8.

⁵ See Timothy Considine *et al.*, Pa. State Univ. Coll. of Earth and Mineral Sciences, Dept. of Energy and Mineral Eng'g, *An Emerging Giant: Prospects and Economic Impacts of Developing the Marcellus Shale Natural Gas Play 2* (2009), available at <http://www.alleghenyconference.org/PDFs/PELMisc/PSUStudyMarcellusShale072409.pdf>.

⁶ See Timothy Considine *et al.*, Pa. State Univ. Coll. of Earth and Mineral Sciences, Dept. of Energy and Mineral Eng'g, *The Pennsylvania Marcellus Natural Gas Industry: Status, Economic Impacts and Future Potential* 13 (2011), available at <http://marcelluscoalition.org/wp-content/uploads/2011/07/Final-2011-PA-Marcellus-Economic-Impacts.pdf>

gas production, but by 2011, unconventional gas made up at least 30% of total domestic gas production.⁷

III. As the Hallowich Family Experienced, Shale Gas Development Poses Serious Health Risks.

Shale gas development can contaminate the water people drink and the air they breathe, compromising their health. This air and water pollution can occur at different stages in gas development, which we summarize here. To extract gas from the Marcellus shale, companies typically use a combination of horizontal drilling and hydraulic fracturing.⁸ After the well has been drilled, the hydraulic fracturing, or “fracking,” stage involves sending millions of gallons of water, mixed with sand and chemicals, into the well at high pressure; this creates and expands fissures in the shale and allows gas to flow into the well.⁹ During the early life of the well, a percentage of the fracturing fluids returns to the surface along with materials in the formation.¹⁰ Throughout the process, companies use heavy machinery and fleets of trucks to create access roads, clear land, and transport materials.¹¹ Each one of these stages in shale gas development poses risks to human health from air and water pollution.

⁷ See Secretary of Energy Advisory Board, Shale Gas Production Subcommittee, *90-Day Report 6* (Aug. 18, 2011) [hereinafter SGPS 90-Day Report], available at http://www.shalegas.energy.gov/resources/081811_90_day_report_final.pdf.

⁸ See Pennsylvania Department of Environmental Protection, *Hydraulic Fracturing Overview 1-2*, <http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/MarcellusShale/DEP%20Fracing%20overview.pdf>.

⁹ Ground Water Protection Council, *Modern Shale Gas Development in the United States: A Primer ES-4* (2009), available at http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf.

¹⁰ U.S. Environmental Protection Agency, *Hydraulic Fracturing Background Information*, http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydrowhat.cfm (last visited Apr. 25, 2012).

¹¹ PennEnvironment, *In the Shadow of the Marcellus Boom* 14, 25 (2011), <http://www.pennenvironment.org/reports/pae/shadow-marcellus-boom>.

A. Shale Gas Development Can Contaminate Water Supplies and Harm Human Health.

Shale gas operations can damage people's health by contaminating their drinking water. Unconventional gas development poses a risk of introducing three kinds of contaminants into water supplies: methane; the chemicals used in drilling and fracturing fluids; and substances present in underground formations. At elevated levels, methane in drinking water poses an obvious safety risk of explosions and fires. Some of the chemicals used in drilling and fracturing fluids can impair the nervous system, immune system, kidney, and cardiovascular system, and some are capable of causing cancer.¹² Many substances that occur naturally in shale formations, and are brought to the surface after fracturing, are toxic to people and animals, and some are radioactive.

Both the drilling and fracturing processes can cause methane to migrate into water supplies.¹³ For example, the Pennsylvania Department of Environmental Protection (“PADEP”) sent notices of violation to a gas company for allowing gas to escape from one of its wells and migrate to drinking water wells in Dimock¹⁴ and Lenox Township.¹⁵ Additionally, there is

¹² See Theo Colborn, *et al.*, *Natural Gas Operations from a Public Health Perspective*, 17:5 *Human and Ecological Risk Assessment: An International Journal* 1039, 1039-56 (2011).

¹³ See Stephen G. Osborne, *et al.*, *Methane Contamination of Drinking Water Accompanying Gas Well Drilling and Hydraulic Fracturing*, *Proceedings of the National Academy of Sciences*, 108, 8172-76 (2011).

¹⁴ For a summary of the February 27, 2009, and May 13, 2009, Notices of Violation, see Consent Order and Agreement between Pennsylvania Department of Environmental Protection and Cabot Oil and Gas Corporation (Nov. 4, 2009).

¹⁵ See Letter from Mark Cooley, Pennsylvania Department of Environmental Protection, to Phil Stalnaker, Cabot Oil and Gas (Sept. 19, 2011).

evidence that fracturing fluids, which can contain toxic ingredients,¹⁶ can migrate to water supplies.¹⁷

After the well has been drilled and the fracturing has been completed, fluids return to the surface – fracturing a typical Marcellus shale well requires several million gallons of water.¹⁸ During the early life of the well, some of the residual fracturing fluids return to the surface together with materials mobilized from the formation (“flowback water”). Later, during production, water displaced from the formation returns to the surface (“produced water”). Produced water can contain brine, gases, salts, trace metals, and naturally occurring radioactive elements.¹⁹ Frequently, the returned fluids, which can include both flowback and produced water, are stored aboveground in lined ponds. The ponds can leak, as happened in Hopewell Township.²⁰ If the returned water is not recycled, it must be disposed of, and improper disposal of returned water has been associated with elevated levels of salts and other dissolved solids in waterways in western Pennsylvania used for drinking water. Prior to a request from PADEP to stop doing so, companies were routinely sending returned water to sewage treatment facilities

¹⁶ See PennEnvironment, *supra* note 11, at 9.

¹⁷ Dominic C. DiGiulio, *et al.*, U.S. Environmental Protection Agency, *Draft, Investigation of Groundwater Contamination near Pavillion, Wyoming*, 32 (2011), http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf. The exact mechanism by which the fluids migrated to drinking water supplies has not been finally determined.

¹⁸ See FracFocus, *Hydraulic Fracturing Water Usage*, <http://fracfocus.org/water-protection/hydraulic-fracturing-usage>; see also FracFocus, *Hydraulic Fracturing Fluid Product Component Information Disclosure*, <http://www.hydraulicfracturingdisclosure.org/fracfocusfind/> (enter the API number in the search box: API number 37-125-24243 (5.9 million gallons used), API number 37-125-24319 (3.7 million gallons used), API number 37-125-24189 (4.4 million gallons used)).

¹⁹ See SGPS 90-Day Report, *supra* note 7, at 21.

²⁰ See Janice Crompton, *Residents Reported Gas Odors Before Explosion*, Pittsburgh Post-Gazette (Apr. 1, 2010), <http://www.post-gazette.com/stories/local/washington/residents-reported-gas-odors-before-explosion-240501/>.

that were not designed to handle it.²¹ Spills can occur at many stages of development, from the mixing of fracturing fluids to the transportation of wastewater; companies have been fined for spilling both fracturing fluids and returned fluids into creeks and wetlands in Susquehanna, Bradford, and Clearfield Counties.²²

B. Shale Gas Development Can Cause Harmful Levels of Air Pollutants

As the Hallowich family experienced from living close to gas compressor and conditioning facilities, unconventional gas development can harm health through air pollution. The primary air pollutants emitted from unconventional natural gas operations are organic compounds such as methane and ethane, volatile organic compounds (“VOCs”), and organic hazardous air pollutants.²³ Volatile organic compounds can react in the atmosphere to form ozone and particulate matter, which can cause respiratory impairments, including asthma, heart attacks, bronchitis, and premature death.²⁴ Unconventional gas drilling has contributed to levels of ozone that greatly exceed air quality standards, most notably in the Dallas-Fort Worth area,

²¹ See Press Release, Pennsylvania Department of Environmental Protection, DEP Calls on Natural Gas Drillers to Stop Giving Treatment Facilities Wastewater (Apr. 19, 2011), *available at* <http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=17071&typeid=1>.

²² See Press Release, Pennsylvania Department of Environmental Protection, DEP Fines Cabot Oil and Gas Corp. \$56,650 for Susquehanna County Spills (Oct. 22, 2009), *available at* <http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=2399&typeid=1>; Press Release, Pennsylvania Department of Environmental Protection, Press Release, DEP Fines Talisman Energy USA for Bradford County Drilling Wastewater Spill, Polluting Nearby Water Resource (Aug. 2, 2010), *available at* <http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=13249&typeid=1>; Tom Barnes, *2 Drillers Fined for Pennsylvania Gas Well Blowout*, Pittsburgh Post-Gazette (July 14, 2010), <http://www.post-gazette.com/stories/local/state/2-drillers-fined-for-pennsylvania-gas-well-blowout-255250/>.

²³ See 76 Fed. Reg. 52,738, 52,745 (Aug. 23, 2011).

²⁴ See *id.* at 52,791 (citing various studies).

Colorado, and Sublette County in Wyoming.²⁵ Emissions can also include air toxics, such as benzene, which can cause cancer.²⁶

The emissions from natural gas development fluctuate over time, from the drilling of the well to the separation and processing of liquids and gases produced from the well. During well completions, natural gas and non-methane hydrocarbons can be released. EPA estimates that unconventional gas development can release 200 times more VOCs during well completions than conventional natural gas drilling.²⁷ When flowback and produced water are brought to the surface, chemical constituents can volatilize and enter the atmosphere²⁸ if the returned water is stored in open pits, as often happens. Additionally, the equipment used to separate, condense, and compress the liquids and gases produced from the well can leak, sending volatile organic compounds into the air.²⁹

In short, unconventional natural gas development is an industrial process that carries a risk of serious water and air pollution. Unlike many other industrial processes, unconventional gas operations often take place literally in people's backyards, as it did on the Hollowich

²⁵ See Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements* 18 (2009), http://www.edf.org/sites/default/files/9235_Barnett_Shale_Report.pdf; Colorado Department of Public Health and Environment, *Colorado Air Quality Control Commission: Report to the Public 2008-2009* (2009); Letter from Dave Freudenthal, Governor, State of Wyoming, to Carol Rushin, Acting Regional Administrator, EPA Region 8, at 1 (2009).

²⁶ See U.S. Environmental Protection Agency, *Addressing Air Emissions from the Oil and Natural Gas Industry: Overview of EPA's Proposed New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants* 5 (2011).

²⁷ See 76 Fed. Reg. at 52,757.

²⁸ See Charles Christen, *Public Health Implications for Marcellus Shale Development* 34 (2010), http://www.chec.pitt.edu/documents/Marcellus%20Shale/GSPH_8-27-10_MarcellusHealthOverview_Christen.pdf.

²⁹ See U.S. Environmental Protection Agency, *Proposed Amendments to Air Regulations for the Oil and Natural Gas Industry: Fact Sheet* 4 (2011), available at <http://www.epa.gov/airquality/oilandgas/pdfs/20110728factsheet.pdf>.

property. Yet despite these risks of serious health effects, the gas industry routinely obstructs access to information relevant to the industry's health effects.

IV. The Natural Gas Industry Uses a Variety of Laws and Litigation Tactics to Prevent Access to Information Relevant to the Health Effects of Gas Development.

The experience of the Hallowich family suggests that unconventional gas development can pose a risk of serious adverse health effects. As the industry continues to expand in Pennsylvania and throughout the country, understanding and preventing those health risks has become a public health priority. Unfortunately, some routine practices of the gas industry stand in the way of developing and distributing information on these public health risks.

A. The Gas Industry Has Secured Exemptions from Many Federal Environmental Laws.

The natural gas industry lobbied for and won exemptions from key federal environmental laws that would otherwise apply to its operations. Since these federal laws contain monitoring and reporting requirements, exempting natural gas operations from these laws reduces transparency and information regarding the industry. Most notably, Congress exempted the injection of hydraulic fracturing fluids, except for fluids using diesel as an additive, from the Safe Drinking Water Act.³⁰ The industry also persuaded Congress to exempt flow-back fluids and produced waters from regulation as hazardous waste under the Resource Recovery and Conservation Act (“RCRA”),³¹ despite the presence of toxic and hazardous chemicals in such fluids and produced waters. Most natural gas facilities are not subject to the Emergency

³⁰ See 42 U.S.C. § 300h(d)(1)(B)(ii) (excluding “the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities” from the definition of “underground injection”).

³¹ See 42 U.S.C. § 6921(b)(2)(A).

Planning and Community Right to Know Act (“EPCRA”),³² which is designed to provide communities with information on toxic chemicals used at, or released from, a facility.

Additionally, natural gas development is exempt from certain provisions of the Clean Air Act (“CAA”)³³ and the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”).³⁴

If these exemptions did not exist, natural gas companies would have to disclose additional information about their operations. Absent the current exemption, the Safe Drinking Water Act would likely require most hydraulic fracturing operations to obtain a permit³⁵ that would require monitoring and reporting information such as the pressure, flow rate, and cumulative volume of fluids injected underground.³⁶ If the current RCRA exemption did not exist, companies would be subject to detailed record-keeping, labeling, and reporting

³² See 42 U.S.C. § 11023 requires the owner or operator of a facility in certain industrial categories that handles certain chemicals above a threshold amount to submit data to EPA on the amount of toxic chemicals used and the amount entering the environment. These requirements apply only to Standard Industrial Classification Codes 23 through 39, *id.* § 11023(b)(1), which do not include most oil and gas operations.

³³ See 42 U.S.C. § 7412(n)(4)(A) (exempting emissions from certain oil and gas production facilities from the provisions governing aggregating sources when defining a “major source”); *id.* § 7412(n)(4)(B) (prohibiting EPA from listing oil and gas production wells as an area source category, except for a well located within a metropolitan area with a population exceeding one million).

³⁴ See 42 U.S.C. § 9601(14) (excluding natural gas and natural gas liquids from the definition of “hazardous substance”).

³⁵ The natural gas industry sought the exemption from the Safe Drinking Water Act in part because of an Eleventh Circuit case holding that hydraulic fracturing comes within the definition of “underground injection” and therefore should be regulated under the provisions of the Safe Drinking Water Act governing underground injection of fluids. See *Legal Envtl. Assistance Found., Inc. v. EPA*, 118 F.3d 1467, 1475, 1478 (11th Cir. 1997).

³⁶ For example, absent the Congressional exemption, unconventional gas operations using hydraulic fracturing might qualify as Class II injection wells subject to the monitoring and reporting requirements of 40 C.F.R. § 146.23.

requirements for the flow-back and produced water that qualified as hazardous waste.³⁷ EPA has indicated that, absent the CAA provision exempting oil and gas facilities from the normal aggregation rules, more natural gas facilities would be “major sources” subject to emission standards for hazardous air pollutants,³⁸ which would require monitoring air emissions.³⁹ Collectively, these federal exemptions⁴⁰ reduce the amount of information collected on the health and environmental impacts of natural gas operations.

B. State Laws Exacerbate Public Health Information Gaps.

The natural gas industry has secured state laws and regulations that allow companies to limit disclosure of information useful in evaluating the public health impacts of gas drilling.⁴¹ For example, some companies continue to use state laws to avoid disclosing the chemical identity of fracturing fluid ingredients, on the grounds that the chemical identity is a trade secret or proprietary information. To take one example, oil and gas companies have persuaded the Wyoming Oil and Gas Commission, acting under Wyoming law, to grant trade secret status to at

³⁷ RCRA requires, among other things, accurate recordkeeping regarding the quantity of hazardous waste generated, the composition of the waste, and where and how the waste is transported and disposed. 42 U.S.C. § 6922(1).

³⁸ See 76 Fed. Reg. 52,738, 52,767.

³⁹ See *id.* at 52,786.

⁴⁰ Eliminating the natural gas industry's exemptions from other federal environmental laws would produce additional information. See 42 U.S.C. § 9603 (imposing a duty under CERCLA to notify the National Response Center of the release of a hazardous substance above a threshold amount); 42 U.S.C. §§ 11004, 11022, 11023 (EPCRA provisions requiring notification of local communities and the public of toxic chemicals used in and/or released from a facility).

⁴¹ As of April 2012, nine states have laws requiring some amount of disclosure of the ingredients of fluids used in hydraulic fracturing of oil and gas wells. The state laws vary widely on such topics as whether the concentration of the chemical must be disclosed, whether trade secrets must be disclosed to a state agency, and whether any disclosed information is available online. The nine states with disclosure laws are Arkansas, Colorado, Louisiana, Michigan, Montana, Ohio, Pennsylvania, Texas, and Wyoming. InsideClimate News, *Fracking Fluid Disclosure Laws* I 1-2 (2012), http://insideclimatenews.org/sites/default/files/assets/2012-02/FrackingDisclosureLawsStatesandBLM_INSIDECLIMATENEWS.pdf.

least 50 ingredients of fracturing fluids,⁴² so that the chemical identities of those ingredients are not publicly available.⁴³

Pennsylvania recently enacted legislation restricting health professionals from disclosing certain information on fracturing fluid ingredients. The law requires companies to disclose to health professionals information on fracturing fluid ingredients claimed as a trade secret or as proprietary information if such information is necessary for the medical treatment of a patient.⁴⁴ However, to obtain such information, a health professional must sign an agreement not to disclose the information “for purposes other than the health needs asserted.” So if a physician obtains information pursuant to this provision and believes that a chemical has caused adverse health effects in a patient, the physician cannot share information about that chemical with other members of the community who might be at a similar risk of exposure, with other health care providers whose patients may be similarly exposed, or with researchers conducting health impact assessments or epidemiological studies.

⁴² See Jeremy Fugleberg, *Lawsuit: Regulators Were Wrong to Guard Fracking Fluid Contents*, Billings Gazette (Mar. 26, 2012), http://billingsgazette.com/news/state-and-regional/wyoming/lawsuit-regulators-were-wrong-to-guard-fracking-fluid-contents/article_4e67c5a4-7893-52e8-8420-872f263c1f0b.html.

⁴³ The phenomenon of companies resisting disclosure of the chemical identity of fracturing fluid ingredients occurs in Pennsylvania as well, as demonstrated by the information companies provide to a voluntary industry database called FracFocus. A brief examination of recent data submitted for Pennsylvania wells shows several chemicals used in Pennsylvania claimed as proprietary or as a trade secret, for which the company failed to provide the Chemical Abstracts Service number and in some cases did not even provide a generic name for the chemical. See Hydraulic Fracturing Fluid Product Component Information Disclosure Form for API numbers 37-125-24243 (ingredient of a corrosion inhibitor claimed as proprietary), 37-125-24319 (two ingredients of a corrosion inhibitor claimed as trade secrets), available by searching <http://www.hydraulicfracturingdisclosure.org/fracfocusfind/>.

⁴⁴ See 58 Pa. Cons. Stat. § 3222.1(b)(10)-(11) (2012).

Physicians and other healthcare providers both inside and outside Pennsylvania have decried the new law's limits on the disclosure of health-related information.⁴⁵ Dr. Jerome A. Paulson, a professor of pediatrics and director of the Mid-Atlantic Center for Children's Health and the Environment, said of the nondisclosure provisions that "[a]ll of the oaths (of the medical profession) require us to work for the good of the public in addition to the individual patients. . . . So blocking our ability to collect and share information, or make the collection and sharing of information more cumbersome, means we won't be able to fulfill our responsibilities."⁴⁶ This recently enacted provision is an example of the gas industry imposing obstacles to the collection and dissemination of information about the public health effects of the industry.

C. The Gas Industry Routinely Uses Protective Orders and Confidentiality Agreements in Litigation and Settlement, Which Impede Understanding of the Health Impacts of the Industry.

In addition to seeking exemptions from federal environmental laws, and lobbying for state laws that allow them to limit disclosure of information, natural gas companies regularly demand confidentiality and nondisclosure agreements in legal proceedings, which further impedes public knowledge of the impacts of gas development. Natural gas companies insist on confidentiality in tort lawsuits relating to natural gas drilling in at least three ways. First, companies often insist on protective orders to govern materials produced during discovery that the companies claim as confidential business information. Such protective orders typically prohibit disclosure to anyone not involved in the litigation, and require destroying or returning

⁴⁵ See Bernard Goldstein & Jill Kriesky, Op-Ed, *The Pennsylvania Gas Law Fails to Protect Public Health*, Pittsburgh Post-Gazette, Mar. 12, 2012, <http://www.post-gazette.com/stories/opinion/perspectives/the-pennsylvania-gas-law-fails-to-protect-public-health-221830/>.

⁴⁶ Susan Phillips, *Leading Public Health Official Says Impact Fee Law Violates Medical Ethics*, StateImpact, Feb. 16, 2012, available at <http://stateimpact.npr.org/pennsylvania/2012/02/16/leading-public-health-official-says-impact-fee-law-violates-medical-ethics/>.

discovery documents to the producing party at the conclusion of the case, among other things. Second, as in most tort cases, the majority of tort cases involving natural gas drilling reach a settlement, and the settlements are usually reached outside of court and are confidential. These settlements typically contain nondisclosure agreements which prohibit the parties from discussing the contents of the settlement or aspects of the case. Third, in the *Hallowich* case, court records are sealed, precluding access to court records that would otherwise be public. Regardless of the precise mechanism by which confidentiality attaches, the results are similar: while the individual litigant may be made whole, the public is deprived of information that may relate to the health impacts of gas development.

As unconventional gas development expands in Pennsylvania and throughout the country, there has been a corresponding increase in lawsuits alleging that gas development has harmed people's health. A search of cases with publicly available docket sheets indicates that gas companies routinely use confidentiality in litigation to limit the public's access to information on the industry. First, in both federal and state courts, companies routinely have protective orders entered that grant the defendant natural gas companies broad discretion to designate materials as confidential. Second, most closed cases are resolved by settlement, and companies insist on confidentiality and nondisclosure as terms of any settlement. *See Exhibit B* (listing the cases demonstrating these trends).⁴⁷

⁴⁷ Exhibit B does not list all tort claims alleging harm from unconventional gas development for at least two reasons. First, some disputes are resolved prior to filing a case, and such pre-filing settlements are not available in any public database. Second, most filed cases ultimately settle, most settlements are reached out-of-court, and some out-of-court settlements are not reflected in the docket sheet. Nonetheless, the trend documented in the Exhibit – that most tort lawsuits against natural gas companies end in out-of-court, confidential settlements – is consistent with the pronouncements of the gas companies in this lawsuit. Def. Opp'n Br. at 2. The trends apparent in the exhibit are consistent, as well, with trends in civil litigation in general. *See Marc Galanter, The Vanishing Trial: An Examination of Trials and Related Matters in Federal and*

When these cases, alleging serious adverse health effects from gas development, are resolved, they are not being resolved in a way that provides more information to the public about the alleged health effects of gas drilling. Instead, the defendant companies are successful at limiting the knowledge of defendants' operations -- especially as they relate to public health -- gained in litigation to the plaintiffs, who are bound by protective orders and nondisclosure agreements preventing them from sharing such information with the public. Litigation secrecy, like state law limits on disclosure such as Pennsylvania's impact fee law, deprives the public of information that could be used to protect public health.

SUMMARY OF ARGUMENT

This case presents a clash between the standard practice of the natural gas industry, which is to insist on secrecy in litigation and in other contexts, and the historic commitment of the courts to public access to judicial proceedings. Physicians and health professionals have called unconventional natural gas development one of the most pressing current public health issues, given the scope of industry activities and the risk of serious health effects from gas operations. Yet natural gas companies have impeded access to information relating to the industry's impacts on public health. The natural gas industry has sought and won exemptions from federal environmental laws, secured state laws that limit disclosure of health-related information, and routinely insists on confidentiality in litigation.

Since gas companies use confidentiality so routinely in so many contexts, it is critical to counter this trend by upholding public access to court records in cases involving the health effects of gas development. The trial court orders closing the proceeding below and sealing the

State Courts, 1 J. Empirical Legal Studies 459, 459 (2004) (noting that 1.8 percent of federal civil cases were resolved by trial in 2002); Scott Moss, *Illuminating Secrecy: A New Economic Analysis of Confidential Settlements*, 105 Mich. L. Rev. 867, 869 (2007) (noting that settlements are usually out-of-court and forbid the parties from discussing their allegations, evidence, or settlement amount).

record are contrary to two separate lines of cases recognizing the heightened public interest in information that may relate to public health and safety and upholding the historic openness of the courts. Since there is a great public interest in knowing the resolution and record in this case, and since a generalized interest in promoting settlement is not sufficient to overcome the presumption of open access to court records, the Court should reverse the Court of Common Pleas and grant the motion to unseal the record.

ARGUMENT

The Court of Common Pleas closed proceedings to the public, approved a confidential settlement, and entered an order sealing the record. In Pennsylvania, analysis of a request to close judicial proceedings or to seal court records “begins with a presumption of openness.” *In re M.B.*, 2003 Pa. Super. 76, ¶ 9 n.2, 819 A.2d 59, 62 n.2 (2003). “In this Commonwealth, there is a presumption, under both the Pennsylvania Constitution and common law, that all court proceedings are open to the public.” *In re J.B.*, 2012 Pa. Super 42, 39 A.3d 421, 425 (2012). Pennsylvania courts have adopted two tests, a constitutional analysis and a common-law analysis, announced in *Publicker Industries, Inc. v. Cohen*, 733 F.2d 1059, 1065 (3d Cir. 1984) for determining whether the parties seeking to close a proceeding and seal a court record have overcome the presumption of public access to court proceedings. *Storms v. O'Malley*, 2001 Pa. Super 184, 779 A.2d 548, 569 (2001); *In re M.B.*, 2003 Pa. Super. 76, ¶ 9 n.2, 819 A.2d at 62 n.2; *R.W. v. Hampe*, 426 Pa. Super. 305, 310 n.3, 626 A.2d 1218, 1220 n.3 (1993).

In the Court of Common Pleas, the newspapers asserted both a First Amendment and a common law right to access the court proceedings and court records. However, no party identified a governmental interest in nondisclosure, and such an interest must be asserted to satisfy the constitutional test. Since no party at the trial court level defended the trial court's order on the basis of the constitutional test, this brief assumes that the common law test controls

in this case. The common law test applies to cases where the interest of a private party is put forth as the basis for sealing the record. “[U]nder the *common* law approach, the court engages in a balancing test, weighing on the one hand the factors in favor of access, and, on the other, those against it.” *Storms*, 2001 Pa. Super 184, ¶ 55, 779 A.2d at 569. Here the public interest in understanding the public health impacts of gas operations outweighs the Appellees’ private interest in maintaining secrecy.

I. There Is a Strong Public Interest in Maintaining Open Court Proceedings and Records Pertaining to Natural Gas Operations That May Impact Public Health.

A. The Natural Gas Industry Routinely Creates Obstacles to Full Public Understanding of the Health Risks of Natural Gas Development.

Medical professionals have called unconventional gas development “a public health issue of the highest priority.”⁴⁸ They call for more studies and more data on the health effects of gas development.⁴⁹ For example, more than 250 medical and health professionals in New York State signed a letter in October 2011 recommending that a full Health Impacts Assessment be conducted to understand and prevent the health risks of unconventional gas development.⁵⁰

Given the health risks, it is critical that scientists and the public have access to the information necessary to understand the public health impacts of drilling. Yet natural gas

⁴⁸ See Press Release, Bassett Medical Center Board of Trustees, Bassett Statements on Hydrofracking, February 9, 2011, available at <http://www.bassett.org/our-network/media-room/news/2011/bassett-statements-on-hydrofracking/>.

⁴⁹ See, e.g., American Academy of Pediatrics, District II, New York State, Memo of Support, June 7, 2010, available at <http://www.tcgasmap.org/media/American%20Academy%20of%20Pediatrics%20Moratorium%20Support%20Letter.pdf> (supporting New York legislation that “provides an opportunity for the EPA to study the potential public health impacts of hydraulic fracturing, and for New York State’s leaders to have that information before it makes any decision about permitting hydraulic fracturing”).

⁵⁰ See Letter from Allan Abramson, et al. to Andrew M. Cuomo, Governor, State of New York, Oct. 5, 2011, available at <http://www.psehealthyenergy.org/data/lettertoGovCuomofinal.pdf>.

companies routinely employ various mechanisms to prevent disclosure of information useful in understanding the health effects of gas development. Having secured exemptions from federal environmental laws, the industry creates and reports less data on gas operations, including underground fluid injection, waste disposal, and air emissions. Companies utilize state laws that allow them to conceal, or to restrict the disclosure of, information such as the precise chemical identity of ingredients of fracturing fluids. This practice deprives researchers and the public of information useful in analyzing the potential toxicity of the chemical and monitoring whether there is any migration of fracturing fluids. In legal proceedings, companies' routine use of confidentiality and nondisclosure provisions further limits public knowledge of information plaintiffs obtain about gas company practices and public knowledge of the resolution of such cases. In short, the nondisclosure practices of the gas industry create obstacles for the public and scientists seeking information about the health effects of gas development.

B. Against the Backdrop of the Industry's Nondisclosure Practices, the Court Should Recognize the Public's Interest in Information Pertaining to Health and Safety.

The public interest in accessing the record in this particular case is heightened by the secrecy generally promoted by the natural gas industry. If the industry were more forthcoming generally – if it did not seek exemptions from otherwise applicable federal and state disclosure requirements, did not advocate for and use state laws to limit disclosure of information such as the identity of chemicals used in drilling and fracturing, and did not routinely silence injured parties during litigation or as a condition of settlement – then an order sealing the record here might not be significant. But the calculus changes when an effort to conceal information is part of a pattern and practice limiting dissemination of information on the health impacts of gas development. Against that background, it is all the more important to ensure that health and safety-related information in court records is accessible to the public.

This Court has recognized the public interest in knowing the resolution of disputes in matters, such as the provision of medical care, that are deemed to be of great public interest. *R.W.*, 426 Pa. Super. at 316, 626 A.2d at 1223 (“The medical community and the public generally have a great interest in observing and learning from medical malpractice actions, and other adversarial proceedings.”). The Third Circuit has reached a similar conclusion about the value of open court proceedings and records in matters of public importance, especially in matters pertaining to public health and safety. *See Republic of the Philippines v. Westinghouse Elec. Corp.*, 949 F.2d 653, 664 (3d Cir. 1991) (“Commentators have recognized that under certain circumstances access to judicial records promotes public health and safety by not allowing secrets hidden in court records to be shielded from public view. . . . Access to civil proceedings and records also acts as a valuable source of information in civil cases that have a public character.”) (internal quotations and citations omitted).

Other jurisdictions have passed legislation or rules acknowledging the heightened public interest in court records, including settlements, in cases that involved alleged risks to public health and safety.⁵¹ Florida, Louisiana, Texas, and Washington have Rules of Civil Procedure or

⁵¹ *See Fla. Stat. Ann.* § 69.081(2)-(3) (prohibiting entry of an order or judgment, and prohibiting enforcement of any contract, which conceals “a public hazard or any information concerning a public hazard” or “information which may be useful to members of the public in protecting themselves from injury which may result from the public hazard.”); *La. Code Civ. Proc. Ann.* art. 1426(C)-(E) (courts may not issue protective orders or seal records “if the information or material sought to be protected relates to a public hazard or relates to information which may be useful to members of the public in protecting themselves from injury that might result from such public hazard,” and courts may not enforce agreements “concealing a public hazard, any information relating to a public hazard, or any information which may be useful to members of the public in protecting themselves from injury that might result from a public hazard”); *Tex. R. Civ. P.* 76a(1)(a)(2), (2)(b) (court records may be sealed only if there is an interest that outweighs “any probable adverse effect that sealing will have upon the general public health or safety,” and defining court records to include settlement agreements “that seek to restrict disclosure of information concerning matters that have a probable adverse effect upon the general public health or safety”); *Wash. Rev. Code Ann.* § 4.24.611 (confidentiality provisions

statutes that, to varying degrees, prohibit parties from using the courts to conceal information that may relate to public health or safety.

Taken together, the decisions of this Court, the decisions of the Third Circuit, and the laws of other jurisdictions reflect the principle that the interests of private parties in maintaining confidentiality should yield when the information in question may relate to public health or safety. This is one of those cases. In this lawsuit, the Hallowich family made allegations of serious health impacts from shale gas operations that are widespread in Pennsylvania and other states. The public has an interest in understanding the health problems that may be associated with gas development, the facts adduced to support the causal relationship, and how these allegations of serious health effects have been resolved.

II. The Public Interest in Unsealing the Record in this Case Outweighs Any Interest Invoked by Appellees.

A. Appellees Offered No Cognizable Evidence of Particularized Harm That Would Result from Unsealing the Court Record.

In the court below, the Appellees offered nothing more than the argument that they always insist on confidentiality in settlements, and court approval should not alter the terms of the settlement they would have insisted upon were court approval not required. Def. Opp'n Br. at 2-3. But this argument misses the point entirely. Court-approved settlements are fundamentally different from out-of-court settlements, since courts are agencies of government and therefore public institutions to which the public has a right of access. Since court approval was required under Pa. R.C.P. 2039, the parties had to present a case-specific, particularized harm that would occur absent sealing and that would outweigh the presumption of public access.

may be entered into or enforced by a court only if the interest in confidentiality outweighs the interests of the public in understanding the nature, source, and extent of the risk of injury from a product or hazardous or toxic substance).

R.W., 426 Pa. Super. at 310 n.3, 626 A.2d at 1220 n.3; *Storms*, 2001 Pa. Super., ¶ 55, 779 A.2d at 569.

In the court below, the Appellees' failed to submit any evidence of a cognizable harm that would occur if the record were not sealed. In contrast with *In re M.B.*, 2003 Pa. Super. 76, ¶¶ 12-16, 819 A.2d at 64-66, in which the Court concluded that closing a dependency proceeding would protect private information regarding children and their family relationships, none of the parties in this case suggested that there were any embarrassing details or private information that might justify sealing the record. Instead, the Appellees justified the sealing order on one basis, and one basis alone: that Appellees would not have entered into the settlement agreement without the confidentiality provision,⁵² and that litigants should be able to reach confidential settlements without fear of public scrutiny. Def. Opp'n Br. at 2-3.

Both the Third Circuit Court of Appeals and the Superior Court have squarely held that court records cannot be sealed based solely on a generalized interest in promoting settlements. Indeed, the Third Circuit has rejected the argument made by the Appellees in this case in the most explicit of terms:

In the name of encouraging settlements, Judge Garth would have us countenance what are essentially secret judicial proceedings. We cannot permit the expediency of the moment to overturn centuries of tradition of open access to court documents and orders.

⁵² In their trial court briefs, Appellees relied heavily on *Beaver*, 11 Pa. D & C 4th 97. *Beaver* is factually distinguishable from this case in every material respect. Whereas in *Beaver*, the plaintiff joined the defendant in resisting efforts to unseal the record, in this case, the Hallowich family has not joined the Appellees in defending the sealing order. In *Beaver*, the plaintiff testified that if the record were not sealed, she feared for the physical safety of her handicapped son and feared that individuals would try to take advantage of his financial situation, if it were disclosed. No party in this case has offered evidence of similar harms that would occur absent the sealing order. Finally, in *Beaver*, the newspapers articulated no public interest in the records they sought, whereas here, the newspapers have claimed that the public has an interest in learning the resolution of a high profile case involving the widespread practice of shale gas development.

. . .

[T]he district court did not rely on any particularized showing of the need for continued secrecy . . . but instead only on the general interest in encouraging settlement. As we have held, that is not enough. Even if we were to assume that some settlements would not be effectuated if their confidentiality was not assured, the generalized interest in encouraging settlements does not rise to the level of interests that we have recognized may outweigh the public's common law right of access.

Bank of America Nat'l Trust & Sav. Ass'n v. Hotel Rittenhouse Assoc., 800 F.2d 339, 345-46 (3d Cir. 1986); *see also Storms*, 2001 Pa. Super., ¶¶ 55-60, 779 A.2d at 569-70 (upholding a lower court determination that the argument that “sealing of the record would encourage settlement did not outweigh the public's interest in open court proceedings” since the “defendants failed to establish that they would suffer a ‘serious injury,’ absent sealing of the record.”).

In the Court of Common Pleas, the Appellees failed to provide any evidence of a particularized interest in preventing public access to court records in this case. As a result, there was nothing for the trial court to balance against the public interest in open court records. For that reason alone, the motion of the newspapers to unseal the record should be granted.

B. The Public Interest in Access to Court Records in this Case Outweighs Any Generalized Interest in Promoting Settlement.

Even if Appellees could legitimately invoke only a general concern about promoting settlement in support of their position, the public interest in unsealing the record far outweighs that concern. The Hallowich family did not oppose the newspapers’ motion to unseal the record, and they have not defended the trial court’s order in this appeal. The Appellees admit that they “would not have entered into the settlement agreement without the confidentiality provision.” Def. Opp’n Br. at 2. It is only the Appellees that have any interest in sealing the court record and preventing the public from learning additional information about the experience of the Hallowich family.

This Court has found that the public interest in open court proceedings outweighs both a defendant's interest in settlements and a plaintiff's interest in privacy. *Storms*, 2001 Pa. Super., ¶¶ 55-60, 779 A.2d at 569-70. Even where a plaintiff has demonstrated that embarrassing personal details would be revealed, this Court has held that the public's interest in open proceedings outweighs the interest in secrecy. *R.W.*, 426 Pa. Super. at 315-17, 626 A.2d at 1222-24. Based on the briefs submitted to the trial court, there are no personal privacy interests at stake here, and the only harm asserted is the alleged harm to promoting settlement. Accordingly, *Storms* and *R.W.* dictate that the public interest in open proceedings outweighs the alleged interest in secrecy in this case.

In the Court of Common Pleas, the Appellees' briefs failed to mention any of the kinds of harms that have been held to outweigh the public's interest in open proceedings. In this case, the trial court briefs mentioned no threats to personal safety or unwanted financial solicitations that might occur absent a sealing order, as in *Beaver*, 11 Pa. D&C 4th at 104. Nor did the trial court briefs disclose any psychological or emotional harm that would befall the minors in this case absent a sealing order, as was the case in *In re M.B.*, 2003 Pa. Super. 76, ¶¶ 12-15, 819 A.2d at 64-65. Indeed, no Pennsylvania court has ever held that court records may be sealed on nothing more than a party's assertion that it would not have settled but for the confidentiality assured by a sealing order. In sum, the Appellees' private interest in sealing the record does not outweigh the public interest in access to information on the resolution and the facts of this case, which bears on the critical issue of the public health effects of natural gas development.

CONCLUSION

For the reasons set forth above, *Amici* respectfully urge this Court to reverse the decision of the Court of Common Pleas and to grant the newspapers' joint motion to unseal the record.

Dated: April 27, 2012

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Exhibit A

Statements of Interest of *Amici Curiae*

Philadelphia Physicians for Social Responsibility (“PSR”) is a chapter of the largest physician-led organization in the U.S. working to prevent nuclear war and proliferation and to slow, stop and reverse global warming and toxic degradation of the environment. PSR’s 50,000 health professionals and concerned citizen members and e-activists, 31 PSR chapters, and 41 student PSR chapters at medical and public health schools, along with national and chapter staff, form a unique nationwide network committed to a safer and healthy world. The Philadelphia Chapter of Physicians for Social Responsibility was founded in 1979 and focuses on safeguarding the environment as well as ensuring access to universal healthcare and promoting non-violence. PSR has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Physicians, Scientists, and Engineers for Healthy Energy (“PSE”) is dedicated to providing unbiased and solid scientific information on issues surrounding unconventional gas development and other novel forms of energy production. PSE’s Board of Directors and affiliated individuals are experts in various fields, ranging from pediatrics and public health to engineering and ecology. PSE has an interest in ensuring that there is public, transparent debate about unconventional natural gas development.

Dr. Bernard D. Goldstein is Emeritus Professor and former Dean of the University of Pittsburgh Graduate School of Public Health. He received his medical degree from New York University and is board certified in Internal Medicine, Hematology, and Toxicology. Dr. Goldstein is a former Assistant Administrator for Research and Development of the U.S. Environmental Protection Agency, appointed by President Ronald Reagan. He is a member of the Institute of Medicine of the U.S.

National Academies of Science, has chaired numerous national and international committees related to environmental health matters, and is a past president of the Society for Risk Analysis. Among his more than 200 publications, Dr. Goldstein has co-authored the chapter on Toxicology in the Federal Judicial Center's Reference Manual on Scientific Evidence. He also has a long history of evaluating and responding to environmental public health threats, including gas drilling in the Marcellus shale region. Dr. Goldstein supports unsealing the record in this case because transparency is necessary to protect public health.

Dr. Walter Tsou is an Adjunct Professor of Family Medicine and Community Health at the University of Pennsylvania. He received his medical degree from the University of Pennsylvania, his Master's in Public Health from the Johns Hopkins School of Hygiene and Public Health, and an honorary Doctorate in Medical Sciences from Drexel University. Dr. Tsou is a founding member of the National Board of Public Health Examiners and the national board of Physicians for a National Health Program. He formerly served as President of the American Public Health Association and Health Commissioner of Philadelphia, and was the founding Deputy Director for Personal Health Services and Medical Director of the Montgomery County (PA) Health Department. He has received numerous awards for his work, including the Pennsylvania Immigration and Citizenship Coalition's Award and the Public Health Recognition Award from the College of Physicians of Philadelphia. Dr. Tsou has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Dr. Jerome A. Paulson is a Professor of Pediatrics at the George Washington University School of Medicine & Health Sciences and a Professor of Environmental & Occupational Health at the George Washington University School of Public Health & Health Services. Dr. Paulson is the Medical Director for National & Global Affairs of the Child Health Advocacy Institute at the Children's National Medical Center. He is also the Director of the Mid-Atlantic Center for Children's Health and the Environment and of the Environmental Health Track at the George Washington University School of Medicine & Health Sciences. Dr. Paulson received his medical degree from Duke University. He is currently the chairperson of the executive committee of the American Academy of Pediatrics' Council on Environmental Health, and serves on the Children's Health Protection Advisory Committee for the U.S. Environmental Protection Agency. In the past, he has worked with the Children's Environmental Health Network, and has also served as a special assistant to the director of the National Center on Environmental Health of the U.S. Centers for Disease Control and Prevention. Dr. Paulson has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Dr. William Rom is the Sol and Judith Bergstein Professor of Medicine at the NYU Langone Medical Center. He received his medical degree from the University of Minnesota and then completed his residency in internal medicine at the University of California, Davis Medical Center and his clinical fellowship in pulmonary medicine at the Mount Sinai Medical Center. Dr. Rom is Board Certified in internal medicine, pulmonary disease, and occupational medicine. An expert in lung disease and pulmonary medicine, Dr. Rom has published dozens of articles presenting research on such topics as

lung cancer, respiratory diseases, and environmental health. Dr. Rom has an interest in ensuring access to the information necessary to analyze, manage, and prevent risks to human health from unconventional gas development.

Dr. Mehernosh P. Khan is a Board Certified Family Physician who has lived and practiced in the suburbs of Pittsburgh for more than 30 years. He has expressed his belief in the importance of training physicians to recognize the health impacts and medical conditions caused by hydraulic fracturing chemicals and waste water in a resolution to the Pennsylvania Academy of Family Practice. He has also signed on to a lawsuit against the Commonwealth challenging Act 13 and is very concerned that this law prevents physicians from acting in the best interest of their patients. Dr. Khan has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Dr. Sandra Steingraber is a Distinguished Scholar in Residence in the Environmental Studies and Science Department at Ithaca College. She received her Ph.D. in biological sciences from the University of Michigan, Ann Arbor. Dr. Steingraber is an internationally recognized authority on the environmental links to cancer and human health. Dr. Steingraber has received numerous awards for her work, including the Heinz Award, the Environmental Health Champion Award from Physicians for Social Responsibility, and the Rachel Carson Leadership Award from Chatham College. She has testified in the European Parliament, and has participated in briefings to Congress and the United Nations. Dr. Steingraber has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Dr. Simona Perry is an applied anthropologist and independent researcher. Dr. Perry received her Doctorate of Philosophy from the University of Massachusetts Amherst and her Master's degree in marine and environmental policy from the University of Washington. She currently holds a Research Scientist appointment at Rensselaer Polytechnic Institute in Troy, New York. In 2009, Dr. Perry began investigating the social and environmental consequences of Marcellus Shale gas development in northeastern Pennsylvania as a Postdoctoral Scholar at Dickinson College in Carlisle, Pennsylvania. Dr. Perry has experienced firsthand the obstacles that confidentiality agreements create for the work of public health and applied social science researchers. Pennsylvania residents impacted by shale gas development have been prevented from participating in Dr. Perry's research because of confidentiality agreements they signed as part of mineral leases, out-of-court settlements, or other transactions with the natural gas industry.

Dr. Robert Oswald is a Professor of Molecular Medicine in the Cornell College of Veterinary Medicine and a Faculty Fellow of the Atkinson Center for a Sustainable Future. Dr. Oswald received his Ph.D. from Vanderbilt University in Biochemistry, studying the effects of toxins on proteins in the central nervous system. He completed postdoctoral studies as a Muscular Dystrophy and Collège de France Fellow at the Institut Pasteur in Paris before joining the faculty of Cornell University in 1981. Dr. Oswald's work on the effects of drugs and toxins on the structure and function of central nervous system proteins has been supported by the National Institutes of Health, the National Science Foundation, and the American Cancer Society. He is currently director of the Molecular Biophysics Training Program at Cornell. Dr. Oswald has served on

numerous review panels for the National Institutes of Health and is on the editorial board of Molecular Pharmacology and the Journal of Biological Chemistry. Dr. Oswald has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Dr. Michelle Bamberger is a veterinarian in private practice in Ithaca, NY. Dr. Bamberger received her D.V.M. from Cornell University in 1985. Before attending Cornell, she earned her Master's degree in pharmacology from Hahnemann University Medical College. After graduating from Cornell, Dr. Bamberger studied at Oxford University and practiced small animal and exotic medicine and surgery in both Massachusetts and New York. Before opening Vet Behavior Consults in 2002, Dr. Bamberger returned to Cornell for training in the field of behavior medicine as a Visiting Fellow. She has taught adult education courses and written two books on the topic of first aid. She devotes much of her spare time to documenting and studying the impacts that hydraulic fracturing for extraction of hydrocarbons has on both animal and human health. Dr. Bamberger supports unsealing the record in this case because knowledge of the health impacts of this family is vital to understanding not only what may have caused their health problems but also in understanding how the health of the general public may be affected.

Kathryn Vennie is a practicing clinical and forensic psychologist. She has been licensed for the independent practice of psychology in Pennsylvania since 1979. Ms. Vennie received a Masters degree in Counseling from Marywood College (now known as Marywood University), and completed further graduate work in psychology at St. John's University and New York University. She is the current President of the Northeastern

Pennsylvania Psychological Association and is an active member of the Pennsylvania Psychological Association. Previously, Ms. Vennie served as a special education supervisor in Berks County, and as Director of Special Education in a four-county Intermediate Unit in Central Pennsylvania consisting of Juniata, Huntington, Mifflin and Fulton Counties. Ms. Vennie is currently treating patients who have been impacted by the disruption of their formerly peaceful rural environment by the Pennsylvania gas industry. Ms. Vennie has an interest in ensuring public access to the information necessary for understanding and preventing the health risks from unconventional gas development.

Earthworks is a non-profit organization dedicated to protecting communities and the environment from the impacts of irresponsible mineral and energy development while seeking sustainable solutions. For over two decades, Earthworks has been engaged in efforts nationwide to reform public policy, improve corporate practices, and use sound science to inform the public of the health, environmental, and economic consequences of mineral extraction and production. Earthworks has worked at the state and federal levels to improve disclosure of the chemicals used in unconventional gas drilling and regulations to reduce air emissions and water contamination. In Pennsylvania and other states, Earthworks has documented the links between health problems and pollution in proximity to gas and oil drilling and facilities.

Exhibit B

Chart Documenting the Uses of Confidentiality and Nondisclosure Agreements in Tort Cases Alleging Injuries from Unconventional Gas Development

Tort Cases Alleging Injuries from Unconventional Natural Gas Development

Note: all information is accurate as of April 27, 2012

The * symbol indicates that as of April 27, 2012, the docket sheet and/or documents in the docket could not be accessed online

State	Case name, number	Plaintiff(s)	Claim	Settled or Active	Information not publicly available
AR	<i>Tucker v. Southwestern Energy Co.</i> , No. 11-0044 (E.D. Ark. filed May 17, 2011)	Class-action on behalf of residents living close to gas operations controlled by the defendant	Southwestern Energy contaminated a private water well with fracking fluid (including alpha methylstyrene), and caused soil and air pollution as well	Active	Protective order governing discovery materials entered December 16, 2011, Doc. # 79
AR	<i>Ginardi v. Frontier Gas Services, LLC</i> , No. 11-0420 (E.D. Ark. filed May 17, 2011)	Class action on behalf of plaintiffs who reside close to a natural gas compressor or transmission stations in the state of Arkansas	Residents living close to natural gas compressor stations are exposed to harmful levels of methane, hydrogen sulfide, and other emissions	Active	Protective order governing discovery materials entered November 9, 2011, Doc. # 79
AR	<i>Berry v. Southwestern Energy Company</i> , No. 11-0045 (E.D. Ark. filed May 17, 2011)	Class action on behalf of plaintiffs who reside within 3 miles of natural gas wells in the state of Arkansas	In 2011, Southwestern Energy caused methane to migrate to the named plaintiffs' drinking water well in Quitman, Arkansas	Active	No protective order entered
CO	Case name and number unknown	Laura Amos	Chemicals used in fracking contaminated plaintiff's drinking water and caused	Settlement in 2006 ¹	According to newspaper accounts, the plaintiff's lawyer obtained documents during

¹ Various newspapers reported that the parties reached a settlement in 2006. Abraham Lustgarten, *Drilling Process Causes Water Supply Alarm*, Denver Post, Nov. 17, 2008, available at http://www.denverpost.com/breakingnews/ci_11001835; Mike Soraghan, *Baffled about Fracking? You're Not Alone*, NEW YORK TIMES, May 13, 2011, available at <http://www.nytimes.com/gwire/2011/05/13/13greenwire-baffled-about-fracking-youre-not-alone-44383.html?pagewanted=all>.

			her to develop a rare form of cancer		discovery proving that chemicals present in the plaintiff's drinking water were used in the defendant's fracking fluids According to press accounts, the settlement contained a nondisclosure agreement
CO	Case name and number unknown	Aimee Ellsworth	Gas operations caused methane contamination of private water well	Settlement	According to the Colorado Oil and Gas Conservation Commission and press reports, the parties reached an out-of-court, confidential settlement ²
CO	<i>Strudley v. Antero Resources Corp.</i> , No. 11-2218 (Denver Co. Dist. Ct. filed Mar. 23, 2011)	William and Beth Strudley, and their two children, William and Charles	Drilling and operation of three gas wells near the family's property caused groundwater contamination and air pollution	Unknown	Unknown*
CO	<i>Evenson v. Antero Resources Corp.</i> , No. 11-5118 (Denver Co. Dist. Ct. filed July 20, 2011)	Families in Garfield County	The defendant gas company exposed the families to hazardous gases, chemicals, and toxic waste	Unknown	Unknown*

² Colorado Oil and Gas Conservation Commission, *Gasland Fact Sheet*, available at <http://cogcc.state.co.us/library/GASLAND%20DOC.pdf>.

LA	<i>Andre v. EXCO Resources, Inc.</i> , No. 11-001610 (W.D. La. filed April 15, 2011)	Class action on behalf of David Andre and others sustaining damages from natural gas well blow out	Methane and other contaminants migrated into drinking water wells as a result of natural gas drilling	Active	No confidentiality agreement or protective order
LA	<i>Beckman v. EXCO Resources, Inc.</i> , No. 11-00617 (W.D. La. filed April 18, 2011)	Six individuals and one corporation	The defendant's drilling operations caused methane and other contaminants to enter the plaintiffs' drinking water supplies	Active	Defendant has not answered yet and therefore discovery has not commenced No confidentiality agreement or protective order
NY	<i>Baker v. Anschutz Exploration Corp.</i> , No. 10-06119 (W.D.N.Y. filed Mar. 9, 2011)	15 people residing in Horseheads, New York	The defendant's drilling operations caused methane and other contaminants to enter the plaintiffs' drinking water supplies	Active	No protective order entered yet
NY	<i>Maring v. Nalbone</i> , No. K 12009001499 (N.Y. Sup. Ct. Chautauqua Co. Filed Aug. 27, 2009)		Defendants' drilling operations contaminated her drinking water well with methane	Unknown*	Unknown*
PA	<i>Armstrong v. Chesapeake Appalachia, LLC</i> , No. 10-02453 (M.D. Pa. filed Dec. 6, 2010) remanded to state court July 29, 2011	Three residents of Sugar Run, Pennsylvania	Defendants drilled three natural gas wells close to plaintiffs' residence and caused methane and other pollutants to contaminate their drinking water	Active	Unknown*
PA	<i>Fiorentino v. Cabot Oil & Gas</i> , No. 09-2284 (M.D. Pa. filed Nov. 19, 2009)	63 residents of Dimock and Montrose	Cabot's drilling operations released methane and other toxins onto the plaintiffs' land and into their groundwater	Active	Discovery materials are subject to a protective order; several sealed documents appear on the docket sheet

PA	<i>Berish v. Southwestern Energy Production Co.</i> , No. 10-1981 (M.D. Pa. filed Sept. 29, 2010)	31 residents of Susquehanna County	Improper well casing allowed fracking fluids and other pollutants to contaminate well water	Active	No protective orders or sealing of documents
PA	<i>Dillon v. Antero Resources Corp.</i> , No. 11-5118 (W.D. Pa. filed Aug. 11, 2011)	David and Tara Dillon	Operation of a gas well drilled near the plaintiffs' property caused contamination of their drinking water and harmed their health	Active	Defendant Antero Resources Corp. moved for entry of a confidentiality agreement governing discovery materials on April 2, 2012
PA	<i>Beca v. Antero Resources Corp.</i> , No. 11-1040 (W.D. Pa. filed Aug. 11, 2011)	Paul and Yvonne Beca	Operation of a gas well drilled near the plaintiffs' property caused contamination of their drinking water and harmed their health	Active	Defendant Antero Resources Corp. moved for entry of a confidentiality agreement governing discovery materials on April 2, 2012
PA	<i>Zimmerman v. Atlas America, LLC</i> , No. 2009-7564 (Pa. Ct. Com. Pl filed Sept. 21, 2009)	The Zimmerman family	Drilling operations contaminated drinking water and soil with toxic chemicals	Unknown*	Unknown*
TX	<i>Scoma v. Chesapeake Energy Corp.</i> , No. 10-1385 (N.D. Tex. filed July 15, 2010)	Jim and Linda Scoma	Chesapeake's drilling activities contaminated plaintiffs' well water	Settled Case dismissed because of settlement, December 9, 2011, Doc. #68	Discovery materials are subject to a protective order

TX	<i>Mitchell v. Encana Oil & Gas, Inc.</i> , No. 10-02555 (N.D. Tex. filed Dec. 15, 2010)	Grace Mitchell	Encana and Chesapeake contaminated the plaintiff's well water	Settled Case voluntarily dismissed on 11/14/11 after settlement	Discovery materials were subject to a protective order agreed to by the parties the settlement was not filed with the court and presumably is confidential
TX	<i>Harris v. Devon Energy Production Co., LP</i> , No. 10-00708 (E.D. Tex. filed Dec. 22, 2010)	Diana and Doug Harris	Devon contaminated two wells on the plaintiffs' property	Case voluntarily dismissed by plaintiffs after defendants moved for summary judgment	Discovery materials were subject to a protective order
TX	<i>Parr v. Aruba Petroleum, Inc.</i> , No. 11-01650 (Dallas County Court at Law No. 5 filed Mar. 8, 2011)	Lisa and Robert Parr	Drilling operations caused a variety of health problems, well contamination, and property damage	Active	Protective order/confidentiality agreement governing discovery materials entered February 3, 2012
TX	<i>Ruggiero v. Aruba Petroleum, Inc.</i> , No. 10-10-801 (Wise County, District Court, filed Oct. 18, 2010)	The Ruggiero family	Drilling operations resulted in, among other things, air emissions that caused respiratory and neurological effects in the plaintiffs	Settlement reached in 2011	Out of court, confidential settlement
TX	<i>Town of Dish v. Atmos Energy Corp.</i> , No. 2011-40097-362 (Denton County, filed Feb. 28, 2011), transferred to number 153-255400-11 (Tarrant County)	The town of Dish, Texas	Several companies built compressors, dehydrators, and pipelines which emitted air toxins	Unknown*	Unknown*
TX	<i>Sizelove v. Williams Production Co., LLC</i> , No. 2010-50355-367 (Denton County, 367th District Court filed Nov. 3, 2010)	John and Jayme Sizelove	Drilling operations and gas compressor stations harmed the plaintiffs' health, by causing headaches, respiratory problems, and other symptoms	Active	Unknown*

TX	<i>Heinkel-Wolfe v. Williams Prod. Co. LLC</i> , No. 2010-43055-362 (Denton County 362nd District Court filed November 3, 2010)	Margaret Heinkel-Wolfe and her daughter, Paige	Drilling operations contaminated the water and air surrounding the plaintiffs' property	Active	Unknown*
WV	<i>Hagy v. Equitable Production Company</i> , No. 10-01372 (S.D.W.Va. removed to federal court Dec. 10, 2010)	Dennis and Tamera Hagy	Improper cement casing and improper handling and disposal of drilling wastes led to contamination of plaintiffs drinking water well	Active	No confidentiality agreement/protective order
WV	<i>Rine v. Chesapeake Appalachia, LLC</i> , No. 11-0004 (N.D. W.Va. filed April 10, 2011)	Larry and Jane Rine	Gas wells and associated waste ponds led to various chemicals contaminating plaintiffs' property and causing emotional stress (no direct physical injuries alleged)	Settled and dismissed on July 7, 2011	Discovery materials were subject to a protective order agreed to by the parties The settlement was not filed with the court and presumably is confidential

EXHIBIT 3

TEDX The Endocrine Disruption Exchange

P.O. Box 1407, Paonia, CO 81428 tedx@tds.net 970-527-4082
www.endocrinedisruption.org

To: Mr. Edward Hanlon, Environmental Protection Agency Designated Federal Officer

Re: Written statement of oral comments presented February 1, 2016 to the EPA Science Advisory Board Hydraulic Fracturing Research Advisory Panel

Date: February 3, 2016

Thank you for this opportunity to share new scientific information with the Science Advisory Board.

I'm Dr. Carol Kwiatkowski, Executive Director of The Endocrine Disruption Exchange, known as TEDX. TEDX is a non-profit organization whose mission is to educate people on the health and environmental impacts of chemical exposure. I am also an adjunct faculty member at the University of Colorado, Boulder. I am an author on three scientific articles on natural gas development, one of which is under review.

On the TEDX website we have a reference list of 48 peer-reviewed articles published since 2009 related to health impacts of unconventional oil and gas <http://endocrinedisruption.org/chemicals-in-natural-gas-operations/peer-reviewed-articles>. Some are very new and I want to highlight them for you today, particularly as they are related to reproduction, development, and hormone activity.

One study, published this year, evaluated the potential reproductive and developmental toxicity of 240 chemicals in fracking fluids and wastewater. Sixty-five percent were shown to affect reproduction, development, or both (Elliott, Ettinger et al. 2016). This corroborates work we published in 2011 (Colborn, Kwiatkowski et al. 2011).

Further, in a recent *in vitro* study, out of 24 oil and gas related chemicals tested, 23 had hormone activity. When a mixture of these hormonally active chemicals was given to pregnant mice, their male offspring had decreased sperm, increased serum testosterone, and increased organ weights (Kassotis, Klemp et al. 2015). Research has also demonstrated the presence of these chemicals in surface and ground water near oil and gas development (Kassotis, Tillitt et al. 2014). It's important to mention that chemicals that disrupt hormone function can do so at extremely low concentrations.

With regard to human evidence, several studies conducted by scientists at the University of Colorado describe possible, probable and actual health impacts of living near oil and gas development. The most striking of these was a study of 125K birth records from 57 rural Colorado counties (McKenzie, Guo et al. 2014). It revealed that

pregnant women living near oil and gas development were more likely to give birth to babies with congenital heart defects.

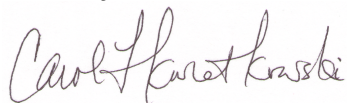
Two other similar studies were published in 2015. One was conducted in Southwest Pennsylvania by scientists at the University of Pittsburgh studying over 15,000 birth records. Babies born near more wells had a greater likelihood of being born small for gestational age and had significantly lower birth weights (Stacy, Brink et al. 2015). Being born underweight has been linked to heart disease, diabetes, and childhood asthma.

The other study was conducted in Central and Northeast Pennsylvania by scientists at Johns Hopkins University, studying over 10,000 birth records. They found proximity to oil and gas development to be associated with an increased likelihood of high-risk pregnancy in the mothers, and preterm birth in the babies (Casey, Savitz et al. 2015).

The important points here are that data from tens of thousands of pregnant women and babies were analyzed in these studies, which were conducted in three different regions of the country, by independent scientists. We don't know if the health effects are from air or water exposure. What we do know is that this kind of industrial activity near people's homes is associated with adverse outcomes in two very vulnerable populations – pregnant women, and children developing in the womb.

There is simply no logic in waiting for widespread systemic impacts to be proven. The finding that hydraulic fracturing can and has contaminated drinking water should be the finding that triggers protective action. So I am urging you to act quickly to correct and finalize the EPA report, as people, including pregnant women and children, continue to be exposed to these chemicals.

Thank you.



Carol F. Kwiatkowski
Executive Director, TEDX

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Stacy, S. L., L. L. Brink, J. C. Larkin, Y. Sadovsky, B. D. Goldstein, B. R. Pitt and E. O. Talbott (2015). "Perinatal outcomes and unconventional natural gas operations in southwest pennsylvania." PLoS One **10**(6): e0126425.

EXHIBIT 4



January 17, 2017

By E-Mail and United States Mail

The Honorable Chris Christie, Governor of New Jersey
The Honorable Andrew M. Cuomo, Governor of New York
The Honorable Jack A. Markell, Governor of Delaware
The Honorable Tom Wolf, Governor of Pennsylvania
Brigadier General William H. Graham, Chair
Lieutenant Colonel Michael A. Bliss, Federal Representative

Delaware River Basin Commission
25 State Police Drive
P.O. Box 7360
West Trenton, NJ 08628-0360

Preservation of Safe Drinking Water for 15-17 Million Americans

Dear Governor Christie, Governor Cuomo, Governor Markell, Governor Wolf,
Brigadier General Graham and Lieutenant Colonel Bliss:

The League of Women Voters of Delaware, New Jersey, New York and Pennsylvania join together in this letter to acknowledge the critical role of the Delaware River Basin Commission (“DRBC”) to protect, conserve and preserve, for the long-term, access to safe drinking water from the Delaware River Basin by 5% of the America’s population.¹ We appreciate your past deliberative stewardship and encourage you to continue to make access to safe drinking water the top priority of the DRBC. Preservation of safe drinking water represents a matter of national security; and a precursor to Americans’ well-being and America’s economic sustainability. This imperative likewise coincides with a time honored position of the League of Women Voters to protect natural resources such as water.

¹ *Economic Value of Nature and Ecosystems in the Delaware River Basin*; Journal of Contemporary Water Research & Education by Gerald J. Kauffman, August 2016.
<http://www.wra.udel.edu/wpcontent/uploads/2016/07/EconomicValueofNatureandEcosystemsintheDelawareRiverBasinGJKauffman2016.pdf>

As reflected by the media spotlight on external impacts to safe drinking water, Americans understand the consequence of degraded health as a result of lapses in government oversight which led to lead leaching into the municipal water pipes serving Flint Michigan residents. Remediation is costlier and less effective than prevention would have been. The League of Women Voters seeks to prevent adverse impacts to drinking water sourced from the Delaware River Basin and is therefore taking this opportunity to share results from current reports to guide the DRBC in making deliberative, science based decisions.

A report, dated August 2016, titled *Economic Value of Nature and Ecosystems in the Delaware River Basin*² reveals that by 2010 a billion gallons of water per day were withdrawn from the Delaware River basin to sustain the region and supply drinking water.³ The report determines that the economic value of the Delaware River basin exceeds \$22 billion per year; with public drinking water supplies valued at \$3.1 billion, \$2.4 billion attributable to benefits from water quality and \$3.8 billion attributable to benefits from water supplies.⁴ The report also attributes a value of \$425 million to potential Marcellus Shale gas extraction,⁵ an industrial activity that presents a competing interest to the preservation of a safe drinking water supply for the 15-17 Million people who rely upon safe drinking water, directly or indirectly, from the Delaware River Basin. Gas drilling operations represent a short-term, boom-bust economy that brings long-term risks and potentially irreversible impacts to drinking water. Such impacts include contamination of the Delaware River and Bay with dangerous materials ranging from carcinogens like benzene, through highly toxic metals such as arsenic and cadmium and radioactive elements including radium, thorium and uranium. Radioactive materials are not removed by standard water treatments and the levels of radioactivity may rise as elements undergo radioactive decay.⁶ Jeopardizing currently operating businesses with a competing use of water resources and pollution potential also need to be considered.

In a long anticipated report issued in December 2016 by the Environmental Protection Agency (“EPA”) titled *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report)*⁷ the EPA found scientific evidence that activities in the hydraulic fracturing water cycle can and have impacted drinking water resources under certain circumstances.

The following findings identified in the EPA report reflect conditions under which impacts from hydraulic fracturing activities can be more frequent or severe:

² *Id.*

³ *Id.* at Page 105

⁴ *Id.* at Page 106

⁵ *Id.* at page 105

⁶ <https://ehp.niehs.nih.gov/1408855/>

⁷ U.S.EPA. Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-16/236F, 2016. <https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>

- (i) Water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources;
- (ii) Spills during the handling of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources;
- (iii) Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources;
- (iv) Injection of hydraulic fracturing fluids directly into groundwater resources;
- (v) Discharge of inadequately treated hydraulic fracturing wastewater to surface water; and
- (vi) Disposal or storage of hydraulic fracturing wastewater in unlined pits resulting in contamination of groundwater resources.

The EPA report also states that 173 of the hydraulic fracturing chemicals identified by EPA have chronic oral toxicity values.

In your capacity as stewards of the environment and protectors of the health and well-being of your constituents who are increasingly confronted by environmentally-created health impacts beyond their control, for which they could become financially responsible, we draw your attention to a journal article published in 2016 titled *Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015*,⁸ which analyzes the results of peer-reviewed publications in three sub-topics, including water quality, and reported that at the time of submission of the article, approximately 69% of the papers in the water quality sub-topic had identified potential and/or actual adverse impacts on water from gas drilling operations. The abstract of this article states the following:

The body of science evaluating the potential impacts of unconventional natural gas development (UNGD) has grown significantly in recent years, although many data gaps remain. Still, a broad empirical understanding of the impacts is beginning to emerge amidst a swell of research. The present categorical assessment provides an overview of the peer reviewed scientific literature from 2009–2015 as it relates to the potential impacts of UNGD on public health, water quality, and air quality. We have categorized all available original research during this time period in an attempt to understand the weight and direction of the scientific literature. Our results indicate that at least 685 papers have been published in peer-reviewed scientific journals that are relevant to assessing the impacts of UNGD. 84% of public health studies contain findings that indicate public health hazards, elevated risks, or adverse health outcomes; 69% of water

⁸ *Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015*, by Jake Hays and Seth B. C. Shonkoff, April 20, 2016. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154164> ; See also an archive of more than 1,000 publications-virtually all peer-reviewed-on 12 different sub-topics related to science and health studies connected to shale and tight gas development,⁸with 157 addressing water quality and 30 addressing water usage available at PSE Study Citation Database. https://www.zotero.org/groups/pse_study_citation_database/items

quality studies contain findings that indicate potential, positive association, or actual incidence of water contamination; and 87% of air quality studies contain findings that indicate elevated air pollutant emissions and/or atmospheric concentrations. This paper demonstrates that the weight of the findings in the scientific literature indicates hazards and elevated risks to human health as well as possible adverse health outcomes associated with UNGD. There are limitations to this type of assessment and it is only intended to provide a snapshot of the scientific knowledge based on the available literature. However, this work can be used to identify themes that lie in or across studies, to prioritize future research, and to provide an empirical foundation for policy decisions.⁹

A review of the annual reports (10-Ks) of publicly traded companies engaged in gas drilling and hydraulic fracturing lifecycle operations in the Commonwealth of Pennsylvania acknowledge their operations pose the following risks and hazards: natural gas leaks, uncontrollable flows of oil, natural gas or well fluids, migration of gas into fresh groundwater sources, spills, ruptures, unauthorized discharges, loss of drilling fluid, build-up of naturally occurring radioactive material, explosions and fire, among other impacts, with such events resulting in injury, loss of life, property damage and environmental pollution. These publicly filed reports also disclose that the companies are neither fully insured nor fully insurable; thereby potentially passing along to citizens the risks and hazards associated with failed gas drilling and hydraulic fracturing operations and gas transmission.¹⁰

A compelling and ever-growing compilation titled *The List of the Harmed*,¹¹ reflects 21,700 individuals or families (with links to published news accounts pertaining to the related entry) reporting illness, death and property-related loss resulting from the same operational risks and hazards cited by the oil and gas industry in their annual 10-K reports to shareholders.

The Delaware River Basin Commissioners are called upon to make, and keep, safe drinking water the top priority when evaluating all proposed uses of the water flowing to and from the Delaware River Basin. The 15-17 million people who obtain their drinking water from the Delaware River Basin rely upon you to keep pace with the complex factors that contribute

⁹ Id at page 1.

¹⁰ See for example: Cabot Oil and Gas Corporation 10-K for 2015, page 27-28, available at: <http://phx.corporate-ir.net/phoenix.zhtml?c=116492&p=irolsecText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTEwNzYxMTc0JkRTRVE9MSZTRVE9J>; Chesapeake Energy Corporation 10-K for 2015, page 30, available at http://www.chk.com/Documents/investors/CHK2015AR_Issuu.pdf; and Range Resources 10-K for 2015, page6 22-23 and 26, available at <http://ir.rangeresources.com/phoenix.zhtml?c=101196&p=irol-secText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTEwNzYxMTc0JkRTRVE9MSZTRVE9J>

¹¹ The List of the Harmed available at: <https://pennsylvaniaallianceforcleanwaterandair.wordpress.com/the-list/> which as of October 31, 2015 reflected **742 entries in Pennsylvania**; and as of October 31, 2016 reflected **21,700** entries from among the following United States: Alabama, Arkansas, California, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri Montana, New Jersey, Nebraska, New Mexico, New York, North Dakota, Off-shore from Louisiana, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Utah Virginia, Wisconsin and Wyoming. New accounts are posted with the entries.

to the cumulative risks of harm to health and property associated with those risks. Links to peer-reviewed studies, 10-K reports and the 21,700 personal accounts referred to in this letter are respectfully intended to assist you in performing your critical role as protectors of the Delaware River Basin for your constituents. To achieve and maintain this end, the Delaware River Basin Commissioners are urged to continue indefinitely the moratorium on gas drilling and hydraulic fracturing in the Delaware River Basin.

Thank you for your service and commitment to your constituents, for your review of the resource material referred to in this letter and for your consideration of the requests made in this letter.

Sincerely,



Jill Fuchs, President
LEAGUE OF WOMEN VOTERS OF DELAWARE



Nancy K. Hedinger, President
LEAGUE OF WOMEN VOTERS OF NEW JERSEY



Dare Thompson, President
LEAGUE OF WOMEN VOTERS OF NEW YORK



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cc: Steven J. Tambini, P.E., Executive Director DRBC steve.tambini@drbc.nj.gov