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BEFORE THE

ENVIRONMENTAL QUALITY BOARD

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IN RE: WASTEWATER TREATMENT REQUIREMENTS

PUBLIC HEARING

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BEFORE: RICHARD MANFREDI, Member

HEARING: Thursday, December 17, 2009
5:06 p.m.

LOCATION: Lehigh County Government Center
17 South 7th Street
Allentown, Pennsylvania 18101

WITNESSES: Jeff Shanks, Tracy Carluccio, Brian Wagner, Cathy Frankenberg, Stephanie Wissman, Will Quale, Carroll Williams, Janet Keim, Jane Benning, Matthew McConnell, Sara Caspar, Jason Marmon, Darree Sicher, Jan Little, Larry Mankies, Katherine Lewis, Leah Zerbe, Erin Crump, Faith Zerbe, Ann Dixon, Sandra Folzer, Iris Marie Bloom, Joy Tetlak-Adelstein, Amy Wilson, Adam Garber, Rob Benner, Shirley Masuo, Eric Pavlak, Steven Danis and Cecilia Dougherty

Reporter: Andrew M. Minnick, Jr.

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P R O C E E D I N G S

MR. MANFREDI:

Good evening, everyone. Can everyone hear me? How about now? You'll hear me if I start to hum a few bars. First I'd like to apologize for the late start. Traffic as usual. But any event, I'd like to welcome everyone to the Environmental Quality Board's public hearing of proposed regulations regarding wastewater treatment requirements. My name is Richard Manfredi. I'm a member of the Environmental Quality Board representing the Citizens Advisory Council from Bucks County. And I officially call this meeting to order. And it is approximately 5:08 p.m.

The purpose of this hearing is for the EQB to formally accept testimony on the proposed regulations concerning wastewater treatment requirements. In addition to this hearing, the EQB held similar hearings on this proposal this week in Cranberry Township on Monday, December 14th, 2009, in Ebensburg on Tuesday, December 15th, 2009, and in Williamsport on Wednesday, December 16th, 2009. This proposed rulemaking that was approved by the EQB on August 18th, 2009 establishes effluent limits for new

or expanded sources of wastewaters containing high concentrations of total dissolved solids, or otherwise known as TDS.

The proposed regulations apply to new wastewater discharges that did not exist on April 1 of 2009 and that contain TDS concentrations greater than 2,000 milligrams or a TDS loading that exceeds 100,000 pounds per day. For purposes of the rulemaking, a new wastewater discharge includes an additional discharge, an expanded discharge or an increased discharge from the facility in existence prior to April 1, 2009.

The proposed rulemaking also establishes monthly average discharge limits of 500 milligrams per L of TDS, 250 milligrams per L of total chlorides and 250 milligrams per L of total sulfates for all discharges of wastewater with high TDS. Additionally, new discharges of water --- wastewater resulting from fracturing production, field exploration, drilling or depletion of oil and gas wells must also meet a monthly average discharge limit of ten milligrams for barium and strontium.

The Department initiated extensive outreach in the development of this proposed rulemaking, including presenting rulemaking for review and comment to the Water Resources Advisory Council,

otherwise known as WRAC, at several meetings in the summer of 2009.

In order to give everyone equal opportunity to comment on this proposal, I'll establish the following ground rules. One, I will first call upon the witnesses who have preregistered to testify at this hearing. I believe there are 21. After hearing from these witnesses, I will provide any other interested parties with the opportunity to testify as time allows. Testimony is limited to ten minutes, up to ten minutes, for each witness. Organizations are requested to designate one witness to present on its behalf. For example, if there are a number of people here that are with one organization, if you want to assign someone to speak on your behalf, feel free to do so. If you want to make individual comments and you're part of an organization, you also can do that as well. Whichever's best for you and whichever you feel offers you the most opportunity to be heard.

Each witness is asked to submit three written copies of his or her testimony to aid in transcribing. This gentleman here is taking the transcription of this hearing. Please hand me, I'll be sitting right here, your copies prior to presenting

your testimony. You will come and stand at this podium and speak outward.

Please state your name, your address and affiliation for the record prior to presenting your testimony. Obviously if you're not affiliated and you're just an individual, so state that. The Environmental Quality Board would appreciate your help by spelling names and terms that may not be generally familiar so the transcript can be as accurate as possible.

Because the purpose of the hearing is receive comments on the proposal, EQB or DEP staff may question witnesses. However the witnesses may not question the EQB or DEP staff. In other words, I won't be answering any questions here this evening, nor will any DEP staff.

In addition to or in place of oral testimony presented at today's hearing, interested persons may also submit written comments on this proposal. All comments must be received by the EQB on or before February 12th, 2010. Again, that date is on or before February 12th, 2010.

Comments should be addressed to the Environmental Quality Board, Post Office Box 8477, Harrisburg, PA, 8 --- I'm sorry, 17105-8477. Again,

comments should be addressed to the Environmental Quality Board, Post Office Box 8477, Harrisburg, PA, 17105-8477. Comments may also be e-mailed to regcomments, R-E-G-C-O-M-M-E-N-T-S, at state.pa.us.

All comments received at this hearing as well as written comments received by the February 12, 2010 deadline will be considered by the EQB and be included in a comment response document, which will be prepared by the Department and reviewed by the EQB prior to the Board taking its final action on this regulation.

Anyone interested in receiving a copy of this transcript of today's hearing may contact the EQB for further information. Again, when I sit down I'll call the first witness and we'll go from there. Come to the podium, state your name, address and if you are affiliated with anyone. Please go from there.

Can everyone hear me? If you can hear me, I'll call out names from here. Otherwise I'll step to the podium. The first person is David Buzzell and Jeff Shanks, PWIA. Hopefully I am pronouncing that correctly.

MR. SHANKS:

Good evening. My name is Jeff Shanks and I'm the director of Environmental Protection and Waste

Management. And I'm here tonight representing the Pennsylvania Waste Industries Association. My office is in Fredericksville, Pennsylvania.

To give you a little bit of background on PWIA, it's a statewide association in the private sector of waste haulers, recyclers and landfill operations. Our mission is to promote efficient and environmentally safe management of solid waste. We advocate sound policies and rules affecting the management of solid waste. We communicate the benefits the waste industry provides to people in the Commonwealth.

The industry contributes $3 billion a year to PA economy. The industry accounts for 31,500 jobs, $904 million in annual employee earnings. In addition, $131.2 million in state refuse taxes and approximately $49 million in host payments. There's 47 permitted and operating municipal waste landfills in the Commonwealth.

Modern landfills are a highly engineered, regulated system designed to protect the environment. Each has significant capital investments in lands, equipment and improvements, including air, water and leachate monitoring and management features and facilities.

I provided a slide that represents an overview of the 47 landfills in Pennsylvania that's been spread out throughout the watersheds and not concentrated on any specific watershed. Only two landfills are within the Mong Watershed and they have insignificant loadings. The rest of the presentation will focus on the proposed regulations and how they would affect landfills, despite the fact that our loadings are very low.

The proposed regulations will impact TDS chloride/sulfate loadings from MSW landfills. We have an actual and a comparative. We'll also talk about TDS treatment options, costs and concerns. How EPA's rulemaking evaluated the treatment of landfill leachate and how the proposed DEP regulations have timelines that are not feasible.

If you evaluate the leachate concentrations, we exceed the proposed regulatory trigger. However, as you evaluate the actual flows and associated loadings, they are very small. The results indicate that the landfill leachate for TDS loadings are small and are approximately 2,000 pounds per day per site for TDS.

Even if we combine the total TDS loadings for the 28 sites that we evaluated, we would still be

under the proposed regulatory trigger of 100,000 pounds per day per site. Actually, let me back up. It would be 100,000 pounds per day for the total 28 sites that we evaluated.

We also made some comparisons to orphan mine discharge in the Commonwealth. The bottom line there is that if you assume an average concentration of approximately 1,100 milligrams per liter, the total daily loads were in excess of six million pounds per day. That's a big different between the landfill loads of 54,000 pounds per day for the 28 sites for which we had data. The take-away message is that landfills are neither the source of nor the fix to the TDS issues that may exist in select waters.

We also looked at the treatment costs. And we worked with some vendors to look at reverse osmosis costs. At a 25,000 gallons per day plant, the capital costs were approximately $1.4 million. Annual O&M was $258,000. The reverse osmosis cost for a 50,000 gallon per day plant was $2.2 million and annual O&M was $428,000. For 100,000 gallon per day plant, the capital costs were about $3.1 million with O&M of $665,000. These costs do not reflect treatment or disposal of concentrate.

We also looked at an actual RO facility

which is in place today. The original capital costs were $3.4 million. O&M was approximately $2 million a year. This does include the reject disposal fee of POTW. We have some significant concerns with RO treatment. There's a 40 percent reject rate. The RO concentrate is currently hauled to POTW.

The new rule would require out of state hauling or evaporation. Evaporation imposes huge energy and cost issues. Treatment of residuals needs to be properly stored, managed and disposed.

We also looked at an evaporation option. It's also high cost. We looked at a 20,000 gallon per day plan. Capital cost of $2 million for startup. Landfill gas may not be available due to existing contracts for renewable energy projects. We looked at the energy cost impacts. It takes approximately 300 cubic feet of natural gas to evaporate 20,000 gallons of water a day for an annual cost approaching $1 million.

Air impacts. Boiler emissions of conventional pollutants and greenhouse gas. Our best estimate is that adding evaporation and/or crystallization doubles the capital cost of the RO unit.

I mentioned the air impacts earlier,

which we also looked at from an evaporator standpoint, and determined that there was significant greenhouse gas emissions.

Let's talk about some of the rulemaking that has been historic by EPA. EPA rulemaking for effluent limits for landfills were published in the Federal Register in January of 2000. It was concluded from that rulemaking that municipal solid waste landfill TDS concentrations do not justify regulation.

Reverse osmosis is not considered a viable option. The small incremental removal of pounds achieved was not justified by the large cost. EPA also has a best available technology analysis on reverse osmosis for landfills. And they concluded that small removal amounts did not justify the cost. It's difficult to evaluate potential operating and associated costs of concentrate disposal problems and the associated potential increase in the cost of operating the reverse osmosis system at a landfill. Development documents also note potential air and energy impacts, as we discussed earlier.

Regulatory timeline. Compliance by January 2011 is not possible. Design and testing of treatment technologies, plans and options to handle treatment residues, development and permitting

treatment facilities, you're looking at 24 months per an RO, 36 months for crystallization and evaporations plants. And if there was the need for additional disposal capacity, you'd be looking at three to five years for the new residual waste materials.

Landfill conclusions. The principal sources of TDS in streams in the Commonwealth is from acid mine drainage. And it's not being addressed by the proposed regulations. The environmental impacts and consequences of the proposed regulations are significant. Landfills should be exempt from regulations based on EPA rulemaking in January 2000 and low loadings.

Regulations should exempt sources with less than 100,000 pounds per day or provide mechanism for variance. Regulations should require development of stream specific water quality limits. DEP should utilize existing tools to address new sources, such as the Marcellus Shale Gas Development.

Thank you very much for the opportunity to make this presentation on behalf of Pennsylvania Waste Industries Association.

MR. MANFREDI:

Mr. Shanks, can I ask you a question?

MR. SHANKS:

Yes, sir.

MR. MANFREDI:

You had mentioned that it is not possible in the timeline by 2011. Is there any circumstance --- by the way that was perfect timing. Is there any circumstance by which it could in 2011?

MR. SHANKS:

No, sir.

MR. MANFREDI:

Most definitively?

MR. SHANKS:

That's correct.

MR. MANFREDI:

Thank you.

MR. SHANKS:

Thank you.

MR. MANFREDI:

The next testifier is Tracy Carluccio.

MS. CARLUCCIO:

Thank you. My name is Tracy Carluccio. I'm deputy director of Delaware River Keeper Network. The address is 300 Pond Street, Bristol, Pennsylvania. We will be submitting more detailed written comment and we will incorporate our verbal comment into the written comment.

First, I would like, for the record, to say a couple things. It is our position that there should be no new drilling permits issued until protective wastewater regulations are adopted by the state. The interim standard that's in place right now is allowing the continuation of drilling permits. And if it's not illegal to be issuing drilling permits that will produce wastewater greater than the amount that our treatment plants can handle, then there ought to be a law.

We should not --- it is absolutely irresponsible on the part of the state to continue this breakneck speed of issuing drilling permits for new shale gas wells. It should be stopped until regulations are adopted.

And secondly, no new discharge permits for wastewater facilities should be issued that do not meet protective standards. This rule would not go into place until 2011. Many existing plants are being grandfathered and wouldn't even be covered. And plants that are issued permits in the meantime can go ahead and discharge above the levels at DEP, themselves, are saying is needed until 2011 or two years beyond the time they're given their permit. This is wrong. No new discharge permits should be

issued until rules are put in place to properly handle this wastewater.

As far as the proposed Chapter 95 regulations are concerned, the regulations will finally establish a total dissolved solid, sulfate and chloride standards for all discharges with high --- not all, all high total dissolved discharges, which is a good thing for Pennsylvania. It's a necessary step forward that the state must take no matter the opposition. And there's going to be plenty of it and there already is from the industry.

However, we have several concerns in what's been proposed. First of all, we know that gas drilling wastewater is loaded with toxins and ingredients that are hazardous to human health and wildlife and aquatic life. In fact, the Department of Energy says that natural gas wastewater is ten times more toxic than oil drilling wastewater.

And New York DEC reported in their draft supplemental generic environmental impact statement that came out in September and is out for comment now until the end of this year that info they gathered from shale gas hydraulic fracturing operators in Pennsylvania and West Virginia reveals 197 products made up of 260 unique chemicals, and another 40

mixtures that they don't know what's in it, because they're not revealed by the industry. And these are all used in the frac fluids that drillers are injecting into the well bores to develop shale gas wells here in this state.

Many are classified as toxic, carcinogenic and are hazardous. Some examples are benzene, benzene derivatives, formaldehyde, methanol, ethylene oxide, toluene and a head-spinning list of many, many more. Yet these dangerous additives are not addressed in these regulations.

And further, the flow-back fluids that erupt to the surface after well is hydrofracted contains deep geology pollutants that reside naturally a mile beneath our feet here. They aren't dangerous when they're isolated by nature well below aquifers and potable water. But when brought to the surface, they're dangerous to human health and, again, to wildlife and aquatic life.

This flow-back, as they call it, must be disposed of along with the factoids that are produced by shale gas development according to the Clean Water Act. Yes, these fluids are very high in total dissolved solids and salts. And it is crucial that these pollutants be treated in the wastewater and

removed.

But many of the other pollutants that have been identified as constituents of concern by Pennsylvania DEP themselves and that have been detected in the flow-back water that New York tested from Pennsylvania and West Virginia are just as or more dangerous than these targeted pollutants in this proposed rulemaking. Bromides, acetones, benzenes, saline, toluene, arsenic and other heavy metals, even radium 226, a derivative of uranium, in amounts up to 267 times the limit safe for discharges and thousands of times the limit safe for drinking water are in the flow-back. The flow-back, the wastewater, is actually radioactive in many instances. And they found that --- New York found that when they tested the flow-back water that was coming from Pennsylvania and West Virginia.

Yet none of these parameters are being addressed by Pennsylvania DEP's proposed rulemaking. They should be. And acute and chronic toxicity testing of effluent should be required to find out how the combination and synthesis and cumulative impact of these ingredients affect water quality, especially in regards to fish and aquatic life at the discharge point and drinking water at the input point.

It is our position that the proposed standards are also measured at the discharge point, not at the point of intake for water quality, in order to protect stream quality. And that background levels of TDS and other pollutants in the stream need to be factored in, in order to say what the safe discharge amount should be. Otherwise, we're continuing to go down a spiral of degradation of our streams and waterways.

Many of our major streams and rivers of Pennsylvania are already overloaded. We can't take any more. DRBC, for instance, requires that no TDS discharge, total dissolved solids discharge, exceed 133 percent of background or 500 parts per million, whichever is stricter. This may not be good enough, but that's the sort of action that DEP should be taking in order to consider what's already in the stream.

And it is also our position that all toxic constituents must be removed from the wastewater stream before discharge. Otherwise, we're putting into place a toxic mixture and no one knows what's in it and nobody can remove it at --- well, at the water withdraw point.

And also, these effluent standards and

requirements should apply to flow-back waters that are reused or recycled for any purpose, such as those of re-injecting for hydrofracing wells. We are very concerned and many people are very concerned that radioactive water and pollutant-laden fluids are being used right now by companies such as Range Resources here in Pennsylvania to hydrofrac wells. They're calling it reuse. They're saving water resources.

Well, they're taking the water that's coming back up in the flow-back and the used hydrofrac fluid and reusing them and reinjecting them in their next well. All it does is save them money. Are we not concentrating pollutants? We want to know the answer to these questions. And if we don't regulate the use of that water, the reuse of that water, we will never know what's in it.

I'd like to take another minute to point out another serious flaw in this rulemaking. Pennsylvania DEP is not taking action to protect our drinking water supplies from degradation and pollution by gas drilling wastewater. And I'm going to tell you --- and it seems on the face of it, everyone's talking about clean drinking water. We're talking about our wonderful, you know, famous rivers here in Pennsylvania.

Well, there's a couple of pieces of evidence in this rulemaking in the way the total dissolved solids strategy, as DEP names it on the website, is moving forward that shows that they are not, specifically not, caring for drinking water supplies.

One is that the EPA and the DEP classifies total dissolved solids in fluid as secondary contaminants. And they say there's, you know, no drinking water standard that is an mcl for these pollutants because their impacts are mainly considered taste and odor. But there are human health impacts, and they're not recognized.

When background levels of salts are already high in a stream, as discussed in the rulemaking for the Monongahela River, and we know what disaster happened there from an overloading of TDS and salts in DEP's strategy paper. And for other intakes, such as for Philadelphia. Philadelphia constantly has to balance its treatment to keep the water from becoming too saline because saline water is dangerous to human health.

So there are human health impacts from total dissolved solids and chlorides when they're too high. Secondly, this rulemaking does not address

bromide, which is a known constituent in flow-back from shale gas wells and is reported in the New York City --- the New York State Department of Environmental Conservation report I mentioned earlier, the draft EIS.

In fact, the samples of Pennsylvania and West Virginia flow-back that were analyzed by New York showed bromide to be present in all samples analyzed up to 3,070 milligrams per liter.

Now, Pennsylvania DEP reports that bromide is a chief parameter of concern in a report by the EPA, Pennsylvania DEP and the Allegheny County Health Department. They put this right in their report and they said they recognize that these entities have been identified. The danger is that bromides form brominate discharge byproducts --- brominated discharge byproducts, which pose a significant human health risk. And that those, in turn, increase chlorinated discharge byproducts.

And these are --- examples of this is trihalomethane. Anybody in Philadelphia knows that trihalomethanes are a problem in Philadelphia and they may be a problem here in Allentown. But they form in the water system. And when you have high bromide, you have high --- you can end up with high discharge

byproducts, such as these brominated byproducts.

Okay. I'll wrap it up. This is a water purveyor's nightmare. Yet DEP does not have adequate representation and a robust participation from the water system operators and the water purveyors who deliver safe drinking water to us on their TDS, their total dissolved solids, stakeholder group. They're just not there. Or if they're there, they're quiet.

It's basically the gas well industry, the coal industry or the folks that run that TDS stakeholders group that are shaping how wastewater is going to be treated in gas drilling here in Pennsylvania. This is a sin. The water purveyor should be at the table with equal respect as anybody else and given more respect in the fact that --- because of the fact that they're going to be left with a mess to clean up.

They have to treat water to drinking water standards. They care about delivering safe water to their constituents, to us. And they can't do it if they're given a chemical mix, they don't even know what's in it, it's filled with bromides and it's filled with TDS and salts because the cumulative impacts are not considered by DEP by the time it gets to their intake.

Now, I would just like to close by saying that the fish and aquatic life in some ways are much more sensitive than human beings. And in this thinking, DEP has decided that the most sensitive receptor is the human being. But there are studies from EPA and studies from California and other places that show that fish and aquatic life are affected at 350 parts per million or less.

So I think in order for us to truly say that we're going to be issuing a rule that's protective of aquatic life, which DEP has the nerve to say in this document, we have to put standards in place that protect them as well. And I'd like to repeat where I started. No new permits until these rules are in place and are protective. And that means no wastewater permit and no drilling permits. Thank you.

MR. MANFREDI:

Thank you, Ms. Carluccio. Next to testify is Brian Wagner, Trout Unlimited. Mr. Wagner?

MR. WAGNER:

Hi. My name's Brian Wagner. I'm vice president of Pennsylvania State Council, Trout Unlimited. My address is 137 South New Street, Nazareth, Pennsylvania.

Trout Unlimited is the nation's leading conservation organization dedicated to conserving, protecting and restoring North America's coldwater fisheries and their watersheds. We have over 12,000 members in Pennsylvania working at the grassroots level. And we wish to present these comments on the proposed changes to 25 Pennsylvania Code Chapter 95.

Organizations and agencies have worked for decades to clean up the waters of the Commonwealth and have spent billions of dollars and billions of man hours. Why would we allow all of these efforts to go to waste? Should we max out the assimilative capacity of our streams now that we've finally cleaned them up? I think not.

PATU feels that an end of pipe discharge limit set by DEP is a necessary tool, will aid to protecting water quality and will provide a more stringent way to protect designated uses of the stream. The proposed Chapter 95 standards places an important tool in DEP's toolbox by requiring the burden of treatment and the requirement of water quality protection to the pollution discharger and not on the downstream users.

PATU is supportive of regulations and policies which will better regulate wastewater, and

are protective of water quality and their designated uses as codified in 25 Pennsylvania Code Chapter 95. We understand that DEP has set this protective criteria based on sound science and best available technology. We understand that the technology is available to implement and effectively regulate end of pipe discharges that meet DEP's proposal of 500 milligrams per liter for TDS and 250 milligrams per liter each for sulfates and chlorides.

These standards will go a long way towards assuring that the federal drinking water standards are met across the state for TDS. It is critical that any TDS wastewater effluent standard be protective of both drinking water uses and aquatic life. DEP should not weaken the proposed discharge standard for TDS. Regulation at the point of discharge will be helpful in assuring protection of aquatic life.

We also believe the proposed regulation is a welcome regulatory means to prevent impairment and ensure that a TMDL process is not required. In fact, in some cases a more stringent criteria may be necessary dependent upon a stream's dilution capacity and the aquatic life and public health protection criteria set through Chapter 93.

In order to ensure protection of both drinking water and aquatic life, the TDS effluent standard should be stated as a daily maximum, not a monthly average. All large TDS sources should be covered by the standard. New sources and new discharges at existing wastewater facilities should be required to meet the TDS standards immediately.

Existing sources of large TDS discharges should be eventually covered through the NPDES permit renewal process. How TDS will be measured or reported by dischargers should also be clarified by DEP. We need these regulations to be in place as soon as possible to protect both aquatic life and drinking water sources.

As it was earlier stated, DEP should stop issuing drilling permits which increase existing wastewater loads in Pennsylvania streams until both Chapter 93 and 95 revisions are in place.

DEP must take measures to ensure that wastewater influent is adequately characterized and properly sampled to match those of its effluent sampling requirements. A minimum of at least a dozen prescreening events would ensure a sampling average that will provide realistic assessment of the composition of any influent. This is very important.

Adequate staff and funding should be in place, ensuring that wastewater effluent is meeting the Chapter 95 regulations.

We also feel that the current set of regulations and policies are not adequate to regulate the groundwater and surface water impacts and the contamination that is occurring from all aspects of drilling operations. Continued permitting of well pads, production wells and pipelines, particularly in Exceptional Value and High Quality watersheds, without effective regulations that require monitoring wells, design standards and surface and groundwater protection plans is not fulfilling the Commonwealth's stewardship responsibilities as required by its constitution.

PATU also requests that if and when the proposed rule is redrafted, the Department should afford the public another opportunity for additional public comment prior to adoption. Any redraft must effectively address the protection of water resources from the pollutants found in gas development wastewaters in a manner which focuses first and foremost on receiving stream protection and adequately controls wastewater pollutants of concern.

The Commonwealth has the duty and the

authority to make these much-needed regulatory changes to protect aquatic life and human health. Thank you.

MR. MANFREDI:

Thank you, Mr. Wagner. Don Williams? Is Don Williams here? Cathy Frankenberg?

MS. FRANKENBERG:

Thank you for the opportunity to speak tonight. My name is Cathy Frankenberg and I'm the program organizer for Clean Water Action in Bethlehem. We are a national group of over one million people who are concerned about the environment, public health and the safety of our drinking water. We are also part of the statewide coalition called the Campaign for Clean Water, which counts over 150 community groups, environmental organizations, sportsman coalitions and religious organizations among its members.

The rush to drill for natural gas on a massive scale has dangerous implications for Pennsylvania's waterways. This project requires the use of millions of gallons of water and produces millions of gallons of wastewater in return. It cannot be overstated how toxic this water is. In fact, Mark Wilson, a marketing manager with G.E. Water and Process Technologies, has called it, quote, the worst water on earth.

The process by which industry softens and breaks shale is called hydraulic fracturing, or fracing for short. These fracing chemicals include such highly toxic materials as hydrochloric acid, lead, bromides, arsenic, benzene and radium. In addition to these chemicals, hydraulic fracturing wastewater is also three to six times as salty as ocean water.

Although we have --- excuse me. Although we have only just begun to drill for this resource, we have already witnessed multiple instances of contamination. For instance, in Dimock, Pennsylvania, thousands of gallons of dangerous fracing fluids were spilled just this September.

In Bradford County, there was a spill of a fluid containing 36 percent hydrochloric acid, a highly caustic material which can cause severe burns and blindness at far lower concentrations. And high levels of total dissolved solids caused --- sorry. High levels of total dissolved solids caused a large fish kill in Dunkard Creek in western Pennsylvania.

In short, wastewater from drilling has already caused great harm to Pennsylvania's water supply. We must now ensure that it does not continue to do so. Because of the highly toxic nature of this

water, we must be exceedingly thorough in the ways in which we regulate, store, treat and test this water before it's released.

We must not give in to the reckless sense of urgency to extract as much gas as quickly as possible. Wastewater from drilling threatens not only the water used by small ponds like Dimock, Pennsylvania, but also large bodies of water like the Delaware River, which supplies drinking water for more than 15 million people, including much of the Lehigh Valley as well as the City of Philadelphia.

If we do not effectively regulate the wastewater from drilling from the very beginning, we could find ourselves with a similar economic burden, compounding what we are now experiencing from almost 200 years of coal mining in our state. We are still paying millions of dollars in taxpayer money to restore those waters now so polluted with acid mine drainage.

Manufacturing industries and farmers in Pennsylvania depend on clean water for production. Our second largest industry is the state, tourism, also depends on clean, fishable streams and healthy animals and forest. We run the risk of losing these economic benefits if we underestimate the important of

protecting our water in a blind rush to extract gas.

While we do commend --- excuse me. We do commend the proposed Chapter 95 changes to 500 milligrams per liter limit per total dissolved solids and 250 milligram liter limit for sulfates and chlorides. However, I am here to ask you to hold the line. Do not weaken these recommendations. Instead, I am urging you to strengthen them.

While we believe these regulations will help to ensure the safety of our water supply, we also suggest that they are not nearly enough to thoroughly protect our waters. The current recommendations suggest standards specific to five common contaminants found in wastewater, TDS or total dissolved solids, chlorides, sulfates, barium and strontium. This is a good place to start but we also need to start standards for other contaminants frequently found in gas drilling wastewater, like bromides, arsenic, benzene and radium, all of which are toxic.

For example, bromides can cause problems with water treatment plants that use chlorine by creating high levels of trihalomethanes, which has been linked to both bladder cancer and reproductive problems.

Finally, DEP has proposed that these new

regulations go into place January 1st, 2011. However, these new regulations must go into place as soon as possible. And until then, the DEP should put a moratorium on granting any new permit for either a wastewater treatment plant or gas drilling operation. These efforts will help ensure that we take advantage of this resource in a way that is cautious and responsible. Like natural gas, our water is also a finite resource, one which must be protected for the generations to come. Thank you.

MR. MANFREDI:

Thank you, Ms. Frankenberg. One more call for Don Williams. The next testifier is Stephanie Wissman.

MS. WISSMAN:

Good evening. My name is Stephanie Catarino Wissman. I'm director of government affairs for the Pennsylvania Chamber of Business and Industry. Our address is 417 Walnut Street, Harrisburg, 170 --- or 17101.

On behalf of the Pennsylvania Chamber's 24,000 members and customers, we appreciate the opportunity to provide this testimony concerning DEP's proposal to amend Chapter 95 to establish an across-the-board treatment standard for total

dissolved solids, TDS, applicable to new or increased TDS dischargers irrespective of watershed, location, impact or need.

Since April of this year, the Chamber and its water work group has worked at a task force with other members and a number of other industry organizations, including the Electric Power Generation Association, Pennsylvania Coal Association, Pennsylvania Chemical Industry Council, Pennsylvania Waste Industry Association and others in attempting to evaluate the potential applicability and impact of this proposal.

Based on the inputs we received in June, we prepared and presented to the Water Resources Advisory Committee, a lengthy working paper which identifies in some detail the concerns and questions from a broad spectrum of the regulated community concerning the Department TDS strategy and the one-size-fits-all treatment standard approach embodied in the Chapter 95 proposal now before the EQB.

Since that time, we have continued to work with the task force to gather additional information from various impacted sectors. Concurrently, our representatives have participated in Department's TDS stakeholders group as a subgroup of

WRAC in this process in an effort to better understand the potential TDS concerns and challenges that may arise in various watersheds, the impacts of this proposal and the potential alternative approaches to addressing possible TDS concerns.

Those efforts have served to confirm many of the concerns that we expressed back in June regarding this particular regulatory proposal and emphasized that we must indeed find another path. The Department's TDS strategy and these proposed Chapter 95 regulations have broad, substantial and far-reaching impacts upon a broad spectrum of Pennsylvania manufacturing and commercial operations. But those consequences and effects appear not to have been afforded appropriate assessment, consideration and balancing.

We believe that irrespective of the worthiness of its objections, these Chapter 95 standards coupled with its fast-track deadlines are ill-advised and unworkable, generating what will become an impending crisis in wastewater management that threatens the ongoing viability of a number of key sectors and enterprises.

As we stated in June, it is essential that the Department work with all affected sectors and

stakeholders to first develop a better understanding of the real TDS challenges in terms of affected streams and conditions, constituents and related causes.

Second, evaluate the options for addressing those TDS challenges. Third, carefully evaluate the technical and economic feasibility and effectiveness of each of the treatment technologies that might be used for various types of TDS constituents, including key issues regarding management and disposition of their resulting residuals. And fourth, reframe a strategy and approach to more effectively address the real TDS challenges in a common sense and cost-effective manner.

In the near future, we will be submitting detailed comments to the EQB on the Chapter 95 proposal. However, let me briefly note six key points of the Chamber's working paper. One, to be effective, Pennsylvania's strategy must be developed with a much more focused and accurate understanding of the specific streams evidencing TDS challenges, specific constituents and hydraulic conditions that lead to TDS issues and the primary sources of those constituents and loadings.

The primary rationale in the new statewide end of the pipe treatment standard proposed in Chapter 95 appears to be the observation of TDS challenges in a limited number of streams, such as the Mon River in western Pennsylvania. Many of which are predominantly impacted by drainage from abandoned mines. And the observation of elevated TDS conditions were limited to extreme and extended low-flow conditions.

The studies and surveys cited in the TDS strategy and shared with the TDS stakeholders group do not evidence that we face a statewide TDS problem, but rather suggest an issue that affects specific streams and stream breaches under certain hydraulic conditions. A close examination of those studies further indicates that the sources and challenges in each watershed are different and one across the board solution will not be efficient or effective.

Two, before adopting and implementing the type of treatment limits as set forth in the proposed Chapter 95, DEP must develop an accurate understanding of the newer sectors affected by the limits and evaluate the technical and economic feasibility of eliminating --- or excuse me, implementing the proposed TDS limits in each of those sectors.

The proposed definition of high TDS sources sweeps in a wide range of industrial enterprises far beyond those mentioned in the TDS strategy, including the electric power generators, petroleum refining, chemical manufacturing, iron and steel manufacturing, pharmaceuticals, meat packing, food processing and others.

Third, in each of these affected sectors, the technologies available to address the high TDS wastewaters are limited subject to varying capabilities depending upon the matrix of constituents in the individual wastewaters and pose significant technical and economic feasibility issues.

As detailed in the Pennsylvania Chamber's June 2009 working paper, the primary technology's proffered to meet the limits mandated by this proposal, reverse osmosis, evaporation and crystallization, are energy-intensive, very expensive from both a capital and operating cost standpoint and leave a significant volume of residuals, concentrated brine or salt cake, which pose unresolved management and disposal issues.

Moreover, none of these technologies can be engineered, pilot tested, permitted and installed in anything like the 18-month time frame envisioned by

the TDS strategy. As just one example, an evaporation crystallization facility designed to handle one million gallons per day of brine would require 87 million kilowatt hours of electricity annually. That's the equivalent of electric demand of some 11,300 households.

Plus, 262,800,000 cubic feet of natural gas annually that would generate nearly 60,000 tons of greenhouse gas carbon emissions per year. As another example, for just one power plant, the estimated cost of brine concentrator and crystallizer to handle air scrubber wastewater is $62 million in capital plus $4.5 million per year in O&M.

Multiplied across the fleet of electric generating stations with current and planned scrubber units, the proposed Chapter 95 rule would engender a demand for several billion dollars in investments.

Four, all potentially available TDS treatment technologies present a substantial unresolved challenge concerning management of the resulting treatment residuals, whether they be concentrated brines in RO reject water or the salt cake sludges of crystallization units. The sheer volume of residuals associated with implementing these proposed rules, which equates to literally thousands

of tons of salt cake per year, should alone be cause for careful review and reconsideration.

Five, the 18-month time frame for implementation of TDS treatment is wholly unrealistic and unachievable. Given design, pilot testing, permitting equipment, lead time and construction steps outlining in both the Chamber's comments and in the presentations of various sectors provided to the TDS stakeholders group, a minimum of a 36-month time frame is involved in development of high TDS treatment facilities.

And that assumes that all design and testing prove that the technology is feasible and that the residual challenge can be met.

Six, the draft Chapter 95 leaves a number of series of unresolved questions in terms of applicability and implementation, including how the rules apply to facilities with multiple existing sources and outfalls, B, situations involving high TDS source water, C, the impacts and the strategy on water conservations and D, the process for determining baselines and increases in TDS concentrations and loadings.

As a bottom line, the Chamber believes that water quality management should realistically

address the instream needs and requirements of Pennsylvania streams based on the best scientific information available. Given the unique TDS challenges for some streams, we believe the Department should adopt a more flexible for regulating TDS and its constituents and discharges, considering assimilative capacity under different load conditions.

Every effort must be made to explore without preconceptions. Every creative alternative an opportunity for addressing TDS concerns that is capable of protecting our environment and also preserves our industry. Indeed, we believe that some of the options discussed at the TDS stakeholders group offer a more realistic and rational approach to addressing those TDS challenges that may affect some streams with actions that can be implemented well before we can fund the cost set of impaired instream quality.

We look forward to continuing to work with the Department in examining and pursuing such better approaches. Thank you.

MR. MANFREDI:

Thank you, Ms. Wissman. The next testifier is Will Quale.

MR. QUALE:

Good evening. My name is Will Quale. I'm the issues and research director for Joe Hoeffel's campaign for governor. Commissioner Hoeffel is deeply concerned with the many issues surrounding Marcellus Shale, advocating responsible policies which balance the creation of jobs and revenue with strong regulations to protect our health and environment. I'm here tonight to express his comments on the DEP's proposed Chapter 95 revisions to wastewater treatment standards.

The Marcellus Shale Natural Gas Reserve represents a tremendous opportunity for Pennsylvania. The creation of thousands of jobs for Pennsylvanians, an economic stimulus to communities and businesses across the Commonwealth and important revenue from extraction taxes, which we will pass and use to help the DEP, Growing Greener and other environmental agencies.

But we must approach this opportunity carefully and manage it responsibly. The stakes are high and protecting ourselves and our environment must come first. We must take strong, swift action to ensure drilling is conducted safely and responsibly. And the proposed Chapter 95 revisions are a very good start. But we believe aspects of the DEP's proposal

should be even stronger to provide greater protection for the Commonwealth.

We agree with the DEP's proposal of 500 milligrams per liter for total dissolved solids and 250 milligrams per liter each for sulfides, sulfates and chlorides. And we urge the DEP not to weaken these proposals. The TDS, sulfates and chlorides standards proposed will help ensure federal safe drinking water standards are met across Pennsylvania.

We further encourage the DEP to add discharge standards for additional contaminants frequently found in natural gas drilling wastewater. We hope the DEP will adopt strict standards for levels of arsenic, benzene, bromides, magnesium and radium in wastewater. These contaminants pose great difficulties to water treatment facilities and are toxic to both humans and wildlife.

We urge the DEP to clearly express each discharge standard as a daily maximum, not as a monthly average. We also urge the DEP to clearly forbid dilution of wastewater as a means of avoiding the applicability of these limits. It is imperative that the DEP enact these regulations as swiftly as possible.

Moreover, we ask that the DEP not issue

new drilling and discharge permits until the Chapter 95 revisions are in place. The wastewater from future natural gas wells must be regulated by these new standards for contaminant levels. The threat to our public health and our environment if we do otherwise is too great.

Finally, we would like to see the DEP exercise caution in issuing new drilling and discharge permits until an EPA conducted cumulative water usage study can be conducted so we can better understand the wide-ranging effects of wastewater contaminants on the Delaware River Watershed.

Strong regulations for generation, treatment and reuse of Marcellus Shale gas drilling wastewater are critical in order for Pennsylvania to safely benefit from the tremendous economic potential of the Marcellus Shale Natural Gas Reserve. Commissioner Hoeffel thanks the DEP for its excellent start on this work to protect the health and safety of our Commonwealth and for the opportunity to offer recommendations on these issues. Thank you.

MR. MANFREDI:

Thank you, Mr. Quale. Our next testifier is Carroll R. Williams.

MR. WILLIAMS:

Good evening. I'm Carroll Williams, Northampton, Pennsylvania. I represent the Environmental Committee and incoming president of Lehigh Valley Telecom Pioneer Club. Since retiring in 1991, I've been very active with the Telecom Pioneer Club of Lehigh Valley. One of my mentors of the Pioneers has been the chairman of our environmental committee, whose task it is to monitor the quality of the river --- or the quality of water of the Lehigh River at two specific points.

These points are mile marker 7.8 and 16.7. These markers relate to the distance of the testing site from the Delaware River at Easton, Pennsylvania. The tests have been made every two weeks from 1984 to 2007 and determine the amount of nitrogen, nitrate, dissolved oxygen, pH phosphate and the temperature of the errant water. In addition to the physical tests, we are cognizant of the overall condition of the testing area.

Since 2007, tests have been made only at Canal Park boat ramp and Allentown, Pennsylvania. This change in testing has the approval of the Delaware River Keeper Network headquartered in Bristol, Pennsylvania. During the quarter century of continuous monitoring, there have been only two

environmental problems.

One of them, Bethlehem Steel in the late '90s, and the other adjacent to Canal Park at the boat ramp in 2000. Our Pioneer monitor observations were successful in averting what could have been a more serious impact on the environment. Both conditions were corrected immediately after the discovery without major impact on the quality of the water of Lehigh.

I suppose you might say that's the good news. Now for the bad news. American industry in general has had a horrible record where the environmental is concerned. The period began during the American Revolution and continued to --- pardon me, continued through 2009. Most companies have laid waste to the environment at an alarming rate. This is especially true with the mining industry in Pennsylvania, anthracite and bituminous coal industry.

I have no data showing the amount of land that has been ruined as a result of mining interest but the evidence is easy to see all around whenever a person travels in the Commonwealth. Starting with the hundreds of huge coal banks in the Carbondale, Honesdale, Scranton, Wilkes-Barre, Hazelton areas, I would submit that with little reclamation these devastated areas have been overtaken.

Similar ruin can easily be seen in the western part of the Commonwealth as a result of bituminous coal industry. The raping of the landscape has been allowed to accumulate as a result of two factors. One, greed and ignorance of the owners to assume responsibility for their deleterious acts. And two, local and state and federal governments for their lax enforcement actions over the decades.

Governmental laws have permitted unsavory owners to walk away from their cleanup responsibilities, left to the taxpayer to correct. Two major catastrophes immediately come to mind. One, the underground coal fires in Cetronia, Pennsylvania may have started accidentally in an exposed coal vein. But $40 million of taxpayers' money and 47 years later, the fires still burn uncontrollably underground for many miles.

Two, another unfortunate incident was a 1959 collapse of the underground mine site adjacent to the Susquehanna River caused by the Knox Coal Company. Knox frequently ignored safety regulations and tunneled further out under the Susquehanna River bottom than it was legally allowed to. Twelve (12) miners died and countless taxpayer dollars were spent in the massive cleanup effort.

In addition to these disasters, there are countless mine accidents that result in significant loss of life and in property damage. All of these are common threads, greed on the part of the owners, an inability or ignorance of government to adequately police the industry.

While the events that I refer to have more direct burden on the gas industry or the water discharge concern, they do, in fact, have a common thread, lack of adequate government oversight and the greed on the part of respective companies. Is that gas industry's immune to these traits? Hardly.

When profits narrow, safety is one of the first aspects that are sacrificed. The safety can involve the actual drilling of the wells, the associated tailings that result in unwanted wastewater. It is paramount that the following regulation be in place before any permit is issued. Precise standards, that is, specifications, governing all phases of the actual drilling operation and the associated water discharge aspect based upon actual data, with no built-in loophole. Protection from water discharge impacting the watershed of existing homes as well as river and streams. Viable protective the standards are required. Currently, the

Commonwealth is not able to meet the required standards to protect the community. This reflects irresponsibility on the part of the Commonwealth. Determination before permits are issued on the impact of underground water supplies and the building process. All loopholes that are presently included in various regulations must be removed so that the quality and safety of life will, under any circumstance, not be compromised.

Passing onto respective drilling companies' all costs associated with the preparation, monitoring and reclamation of the environment. I suggest that all these costs be identified and placed in what I call the new reclamation trust fund to be used to restore the environment.

In summary, the past --- that is, the subject of the drilling has been captured underground for millions of years. Whether the drilling takes place in 2009, 2010 or later is basically a moot point. Encapsulated gas will still be there. The one important point that we ask is the timing for the market forces.

This means that the Commonwealth must be certain that active regulations and safeguards are in place before one spade of dirt is turned in order to

ensure that the environments protected as well as the wellbeing of the impacted Commonwealth residents. Anything short of this is definitely not acceptable. Thank you.

MR. MANFREDI:

Thank you, Mr. Williams. The next testifier is Janet Keim, fellow Citizens Advisory Council Member.

MS. KEIM:

My name is Janet Keim. I'm a member of the Lehigh Watershed Coalition. I live on 11 West Pine Street, Emmaus, Pennsylvania. In reference to Chapter 95 code revisions, regulations to the control of discharges from Marcellus Shale gas drilling are needed immediately to protect our streams and rivers.

Discharges from water use in fracturing from permitted gas drilling have already polluted wells and streams. Permits have been issued without having any regulations in place. This is contrary to DEP's core mission. I'd like to read a part of DEP's core mission from their own document.

The Department of Environmental Protection's mission is to protect Pennsylvania's air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner

environment. We will work as partners with individuals, organizations, governments and business to prevent pollution and restore our natural resources.

It further states under pollution prevention paragraph, we promote the goal of zero discharge through pollution prevention and encourage compliance, assistance and problem solving to stop pollution before it starts. Under Pennsylvania's Environmental Rights Amendment to our constitution, Article One, Section 27, DEP has a legal mandate to protect our finite natural resources.

Because of the lagging economy, economic development pressure to relax environmental regulations has become a serious issue. All segments of the community must understand that we all need quality water and that this resource is finite. Once destroyed, it cannot be replaced.

There is a constitutional right, a legal right, to protect and preserve our water. If anyone is aware of a legal or a constitutional right to allow economic development to occur that downgrades or destroys our finite natural resources for immediate profit, may I please have a copy? Please adopt and enforce regulations that will protect the streams,

rivers and aquifers of Pennsylvania.

MR. MANFREDI:

Thank you, Ms. Keim. Excuse me. The next testifier is Jane Benning.

MS. BENNING:

I'm Jane Benning, 3111 Douglas Road, Allentown, Pennsylvania. My comments are concerning DEP's Chapter 95 proposed wastewater regulations. Do not dilute the standards. We need strong standards to protect our drinking water. I strongly urge you to protect our state's drinking water regarding the Marcellus wastewater.

We cannot always be guided by greed but must protect our finite resources such as water. Marcellus wastewater contains a mix of heavy metals, including arsenic and lead, and toxic chemicals, such as benzene, that can cause cancer.

Also, this wastewater is generally three to six times saltier than seawater and has already changed some freshwater streams in Pennsylvania into saltwater environments.

We need safe drinking water. And DEP's proposal of 500 milligrams per liter for total dissolved solids and 250 milligrams per liter each for sulfates and chlorides will go a long way toward

ensuring that our drinking water supplies will not have unsafe levels of these contaminants.

We need these regulations in place as soon as possible to protect our rivers and drinking water. There should be no drilling permits given out until wastewater rules are in place. Existing or proposed wastewater plants should also be stopped by DEP for polluting our rivers and they should be made to follow these new rules.

DEP should add discharge standards for those contaminants that are frequently found in the Marcellus Shale gas drilling wastewater. These include bromide, benzene, arsenic, radium and many others. These are toxic to humans and, in many cases, cannot be removed by water treatment systems.

DEP needs to ensure that all aspects of the generation of Marcellus wastewater are regulated. Under current laws, there are not requirements to track wastewater from the drilling site to the treatment plant. And there is not oversight over the reuse of Marcellus wastewater.

Attached I have a news article which was printed in the Morning Call. And I'd like to read it to you. This is regarding residents are suing the gas driller, citing contaminated wells. Cabot Oil and Gas

Corporation polluted their drinking sources with its drilling practices, they claim. This is in Dimock, Susquehanna County. And I believe one of the other speakers referred to that incident.

Pat Fanelli says there's something in the drinking water at her house. The last time she drank it, she says she vomited four times. It makes her children sick also. Like her neighbors in this rural community 15 miles south of the New York border, Fanelli signed a lease with a major national gas driller to explore a potentially lucrative formation beneath her land.

Now Fanelli and others are Plaintiffs in a lawsuit that alleges Houston-based Cabot Oil and Gas Corporation polluted their wells with methane gas and other contaminants, destroying the value of their homes and threatening their health. A Cabot spokesman said the lawsuit filed late Thursday in federal court was without merit.

At a news conference Friday to announce the suit, residents described an ordeal that began shortly after Cabot started drilling near their homes. And I think it gets very interesting as we go along. The water that came out of their faucets suddenly become cloudy and discolored, and it smelled and

tasted foul.

Then on New Year's Day, a resident's water well exploded, prompting a state investigation that found Cabot had allowed combustible gas to escape into the region's groundwater supplies. They were never told that this was even a possibility, said Alan Fuchsberg an attorney for the Plaintiffs.

More than a dozen families have filed suit, asking for an environmental cleanup, medical monitoring and money damages in excess of $75,000 each. The State Department of Environmental Protection has determined that 13 wells were polluted, signing consent decrees with Cabot earlier this month in which the company agreed to pay a $120,000 fine, take steps to improve its drilling operations and restore or replace the affected water supplies.

This is after the fact. This is after the fact. Pennsylvania regulators citing three chemical spills at a single well site in Dimock in September halted Cabot's use of a drilling technique that used liquids to fracture rock and release natural gas. Cabot was permitted to resume hydraulic fracturing or fracing, as I've seen some signs held up, several weeks later, after DEP said the company took steps to prevent a recurrence. The spills are

cited in the residents' lawsuit. Cabot spokesman Ken Komoroski said Friday that the company has not admitted to polluting residents' wells. He said a company investigation continues.

On one hand, if Cabot caused a methane contamination, certainly its understandable why everyone is upset and Cabot will address that solution, he says, but I wonder how they'll feel if at some point it's proven that Cabot didn't cause it, that all this anger and frustration has been based on a false premise. And we just don't know yet.

Cabot is among a slew of exploration companies that are drilling in Marcellus Shale, a layer of rock deep underground that experts say holds vast stores of largely untapped natural gas. Once again, we are at it with our greed and that's the main driver of things. And I must say I think Pennsylvania's one of the most guilty. Thank you for this opportunity.

MR. MANFREDI:

Thank you, Ms. Bennett. The next testifier is Matthew McConnell.

MR. MCCONNELL:

My name's Matthew McConnell. I'm at 6073 Clauser Road in Orefield, Pennsylvania. I am the

conservation chair in the Lehigh Valley group of Pennsylvania Chapter Sierra Club. And I have a statement from the Sierra Club.

The Sierra Club supports an energy policy that moves us toward the clean energy future. However, we do not support natural gas drilling if it causes harm to the environment. At present, drilling for gas in the Marcellus Shale is causing harm to the waters of this Commonwealth because the wastewater produced is discharged untreated into our streams.

The Department of Environmental Resources has finally recognized the discharge of untreated wastewater from Marcellus gas wells as an environmental problem. Discharge limits are now being proposed under 25 PA Code Chapter 95. There are two sources of wastewater from Marcellus gas wells, flow-back water from the fracing process and produced water.

Flow-back water can contain many contaminants. According to the United States geological survey fact sheet on Marcellus Shale, for gas to flow out of the shale, nearly all of the water injected into the well during the hydrofrac treatment must be recovered and disposed of. In addition to the problem of dealing with large bulk volumes of liquid

waste, contaminants in the water may complicate wastewater treatment. Whereas the percentage of chemical additives in the typical hydrofrac fluid is commonly less than .5 percent by volume, the quantity of fluid used in these hydrofracs is so large that the addition --- that the additives in three million gallons of a hydrofraced job, for example, would result in about 15,000 gallons of chemicals in the waste.

Along with the introduced chemicals, hydrofraced water is in close contact with the rock during stimulation treatment and when recovered may contain a variety of formation materials, including brines, heavy metals, radio nuclides and organics that can make wastewater treatment difficult and expensive. The formation brines often contain relatively high concentrations of sodium, chloride, bromide and other inorganic constituents such as arsenic, barium, other heavy metals and radio nuclides that significantly exceed drinking water standards.

Our freshwater river systems, the Allegheny, Monongahela, Susquehanna and Delaware Rivers, and our smaller streams do not have the assimilated capacity to absorb the heavy metals and brines from these waste streams. TDS causes toxicity

to water bodies to increases in salinity, changes in the ionic composition of the water and toxicity of individual ions. A major concern associated with high TDS concentrations relates to the direct effects of increased salinity on the health of aquatic organisms. Increases in salinity have caused a shift in biotic communities.

We support the three major effluent limitations announced by DEP in this regulation. The discharge may not contain more than 500 milligrams per liter of TDS as a monthly average. The discharge may not contain more than 250 milligrams per liter of total sulfates as a monthly average and 250 milligrams of total chlorides as a monthly average. We believe each is necessary to maintain water quality in our streams. We hope that these will be the first in a series of measures taken to ensure responsible gas drilling that does not degrade the environment.

One other point. The equipment from out of state, brought in from out of state to perform the work, should be sanitized so as not to spread materials that aren't receptive. Thank you very much.

MR. MANFREDI:

Thank you, Mr. McConnell. The next testifier is Sarah Caspar.

MS. CASPAR:

Hi. I'm Sarah Caspar. I'm a League of Women Voter member. I've worked for U.S. EPA for several years. Oh, sorry. This better? Okay. I'm Sarah Caspar. My experience with water, drinking water and wastewater is 16 years with U.S. EPA. And I am very familiar with particularly waste and problems with waste, and the problems that our rivers in Pennsylvania already have had, regardless of the Marcellus Shale drilling.

What goes into the Marcellus Shale drilling is a matter that we do not know what the entire number of chemicals are because some of that is left out because of --- what is it called? Business ---? Thank you.

And we do know that the water that has come out has created a situation in some rivers and streams that creates a media that kills fish. So if this is happening then there is something wrong with our system so far of measuring the toxicity of this water.

If the regulations are going to apply with what comes back out, how are they going to test it? What means of testing are they going to use? And is that water going to be potable when they're

finished? In other words, can we drink it? It's not just the streams that are going to be affected. It's us, our groundwater, what we drink, what comes out of the tap. And we have enough problems with that already. We don't need to make them worse.

Marcellus Shale drilling, I heard on the radio, NPR, in coming up here, that it is --- it's the hope for Pennsylvania, for employment for gas. So it's got to happen. And that's not what I'm saying. I'm not saying don't let it happen. I'm saying if we let it go and let continue, then we've got to take --- put the protections in place so that we are not hurt by it, so that our wildlife is not hurt by it, our fish, us. And that's the important message that --- that's what I feel is most important here. That's it.

MR. MANFREDI:

Thank you, Ms. Caspar. The next testifier is Jason Marmon.

MR. MARMON:

First of all, I apologize for my voice. It's getting over a little cold. I'm here on behalf of Congressman Joe Sestak. He gives his regards. He was not able to make it here today. But I am his environmental energy legislative assistant, so he has directed me to come up and read a statement on his

behalf.

I want to thank the Environmental Quality Board for holding these public hearings and commend them for the recognizing of risks that expanding natural gas drilling poses to our health, environment and our communities. I also want to thank everyone who has attended and participated tonight and at the other meetings held this week.

I believe in responsible development of Pennsylvania's energy resources, including natural gas, as part of a transition to a cleaner, more renewable and more secure energy supply. In Pennsylvania alone, there are several hundred trillion cubic feet of natural gas, enough to supply this country's demand for decades to come.

Natural gas can boost our economy and cut our dependency on foreign oil. And it also causes less than half of the carbon emissions of coal, allowing for us to reduce our impact on climate change in the near term.

Our abundant natural resources are a blessing for our Commonwealth. We should never have to sacrifice our health and our safety, clean air and water, natural lands and communities to companies seeking to access our natural wealth. Clear

regulations and strict accountability to violators can protect us from abuse and carelessness. Reasonable fees can offset the cost of these protections and provide a sustainable investment in Pennsylvania.

Done improperly, drilling can seriously harm our health, safety, environment and land values. It should be done only with clear and transparent reporting and strong oversight. That's why I've written to the Secretary of DEP Energy in the Department to make its report on oversight on drilling operations readily available to the public.

It's also important that Pennsylvanians know that this drilling, called hydrofracing, falls under the so-called Halliburton loophole that was lifted through President Bush's energy bill in 2005 and allows energy companies to ignore the rules of the Federal Safe Drinking Water Act. These protections exist for a reason.

Fracing involves huge amounts of water laced with chemicals that has already contaminated drinking water in several counties in Pennsylvania. That is why I cosponsored the Frac Act to close this loophole. I also helped pass legislation calling for the EPA to look into threats this drilling method poses to our water supply.

Right now Pennsylvania legislature and the DEP have the power and responsibility to protect the people of Pennsylvania from the potential harmful effects of drilling. The wastewater regulations we are commenting upon tonight are a start, but much more needs to be done.

New regulations should not favor by grandfathering use of older, less capable treatment processes at the expense of encouraging the use of state of the art facilities. Regulations should cover all major components of fracing water so that harmful substances don't end up in our streams and rivers.

Furthermore, the Commonwealth owes it to this and future generations to make sure drilling does not cause irreparable harm to our natural resources, especially protecting our state lands. I believe that the state legislation of DEP must establish clear and effective regulations prior to further expansion of drilling in order to decide how best to protect our citizens and our natural resources.

There is no doubt in my mind that if proper forces come to bear, this can be done and done quickly so that we can move into a new era of economic prosperity for the Commonwealth while ensuring Pennsylvanians that their health and natural resources

are adequately protected.

I am not convinced we currently have strong enough environmental health and property safeguards. And I'm not satisfied that the people will have the access to just compensation, should even the best safeguards fail.

Let's take lessons from an earlier generation of energy development. Acid mine drainage is the legacy of abandoned coal mines. It has left over 2,500 miles of deteriorated streams and 250,000 acres of contaminated land in Pennsylvania at the expense of $15 billion to clean up.

We have a real opportunity in Pennsylvania to benefit from the resources of Marcellus Shale, one of the largest natural gas resources on the planet. There is no reason to allow this bounty to ultimately turn out to be a net harm for our state and our families. Let's not cash in on our resources today in a way that causes disproportionate harms, brings little lasting benefit and results in a greater cost in the future.

This is our state. These are our resources. Let's utilize them in a way that is best for all people of Pennsylvania and for generations that follow.

MR. MANFREDI:

Thank you, Mr. Marmon. The next one is 15. And I'm not sure. I've been told I received a separate list. So the numbers you were assigned may be different. I'll tell you what I will do for everyone's convenience. I will read off the names in order. If anyone wants to go use the facilities or do whatever you may need to do, you can do that.

I apologize in advance if I'm mispronouncing your names. Darree Sicher, Jan Little, Larry Mankies, Katherine Lewis, Leah Zerbe, Erin Crump, George Weitzel or Weitzel (changes pronunciation), Susan Norris and Faith Zerbe. Also if there is anyone who would like to sign up to testify, I'll put a sign-up sheet here.

UNIDENTIFIED SPEAKER:

I mean, I signed up quite a while ago and I'm wondering if my name is on the list.

UNIDENTIFIED SPEAKER:

And I signed up before some other people and my name isn't ---.

MR. MANFREDI:

Well, if you're here and you want to testify, you're going to be allowed to testify. Those are all the names that I was given. So please feel

free. And do you have a pen you can use ---?

OFF RECORD DISCUSSION

MR. MANFREDI:

And again, the next person is Darree Sicher. Was I close?

MS. SICHER:

Yeah. Hello. Thank you for the opportunity to speak. My name's Darree Sicher. I'm with a group called United Sludge-Free Alliance. So first of all, one of the things I like about a gathering like this is the different ages. I'd like to see a little more color in the crowd, but we get what we can. So this is what democracy looks like. Thanks for coming out, folks.

So as a member of our democracy, I absolutely anticipate that our representative of the Department of Environment and everybody involved will hear the requests of the community, the neighbors and taxpayers.

There has been a lot of discussion already tonight about the concerns about water quality before and after discharge. So you might wonder what, aside from me being like a human here on earth and consuming water, what United Sludge-Free Alliance would have to do with this issue. So what I'd like to

do is put a little point on the comments of people talking about, well, we need treatment of the wastewater. So what does that mean? What does that mean?

I jotted down a little bit of info about our --- in Pennsylvania, just some of our larger rivers, watershed areas because this is not like a new issue. This year in April of 2009, Atlantic States Cast Iron Pipe Company of Phillipsburg, New Jersey, was sentenced to an $80 million fine for contaminating the Delaware River. This was the fourth criminal prosecution of this one company since 2005.

Delaware River's within a one-day drive of 40 percent of all the U.S. Population. Forty (40) percent is within a one-day drive of the Delaware River. That's really important. 7.2 billion people rely on the Delaware Watershed for their water, plus another 7 million just is New York City and New Jersey. That's why this is important.

Chesapeake Bay Watershed includes six states. I was amazed by that. Six states are to the Chesapeake Bay Watershed. Our new administration has made the Chesapeake Bay Watershed issue so important because it's so polluted. Six states, 16.6 million people live within the Chesapeake Bay Watershed area.

The Susquehanna River shed, over four million people just in the Susquehanna. Susquehanna Basin accounts for 45 percent of Pennsylvania. So when we're talking about a water pollution issue, it's not your town or my town or our town. It's not a political boundary. It's not a township. It's not even a state. All of this goes to the Atlantic. And all of this is what we consume.

So here's some interesting things that we're finding in studies of water. Manganese is linking to cancer is both water and airborne. Endocrine disruptors found in water. Endocrine disruptors are the things that are --- for instance, your reproductive organs. Where they're finding intersex fish and frogs downstream from wastewater treatment plants. So if you think because it's treated its safe, guess again.

Resistance. They're finding every --- the EPA found that every wastewater treatment plant that they checked carried 11 pharmaceuticals in the water that was released that was considered safe. We're finding MRSA on our beaches. MRSA actually --- there's more deaths from MRSA than there are from AIDS. MRSA is not tested for in wastewater treatment plants and yet they are finding that malaise.

A sevenfold increase in autism in areas of California, and studies have found that that's environmental. That's also the areas where they use the waste from the wastewater treatment plant, the water effluent that comes out, they use that to water the plants that we eat.

In 2002, the EPA actually recognized that there have been no studies of the human effects of --- they actually have never studied how safe sewage sludge is for humans. And all of this is using all of these watersheds that I was just talking about, Pennsylvania gets the most sewage sludge in the entire nation. We import from five states the most sludged counties are Berks and York. They're also the largest farm communities. So your food is growing in it.

I just want you to know this because what is going to happen with this treated waste from the Marcellus Shale issue? Okay. Who's treating that? The EPA is our national regulator. They only require testing for nine elements, nine of the hundreds of thousands that we find --- of chemicals, pharmaceuticals, viruses. Nine elements, mercury, arsenic, molybdenum, nickel, selenium, cadmium, copper, lead, zinc. No pharmaceuticals, no viruses, no --- they have two indicators, E. Coli and

salmonella. 2007, the EPA themselves found 145 chemicals in every single wastewater treatment plant that they checked. So I'm just pointing this out. They found metals, fire-retardants, pharmaceuticals, hormones. The EPA, in fact, released an article a couple weeks ago stating that, gee, maybe we should check how these things interact together.

So when we're releasing this wastewater from the Marcellus Shale issue and pouring it into our creeks or putting it back into our communities, they never, never tested how these things interact. We see a rise in cancer around the country. That's everybody, whether it's Mr. Gasman, Mr. Troutman, Mr. EPA man, Mr. DEP. All of our families are getting this. All of our families are getting this water. All of our families are eating this food.

So that's really a snippet about this sludge issue. I put a paper out on --- it's on radiation and the water effluents in Rohrsburg, radiation in the Schuylkill River and that's from the laundry facility at Limerick. But guess what? They don't have a test for radiation or sewage sludge on their food source. They found that it's because of being dumped at a landfill.

So in fact, there's stricter rules to

dump stuff in a landfill, then the effluent's coming out of the wastewater treatment plant and the sludge is being used for watering fields.

My concern is who is going to watch this issue? In an effort to balance our state budget, our state DEP, in fact, just had a 30 percent cut. They were the largest cut to balance the budget. So Department of Environmental Protection is overloaded as it is. Last year a lot of the fuss was about the animal --- puppy mills. That actually was the same budget that was supposed to be watching the sludge issue. So biologists were left with no money, because it was all used for puppy mills.

And I'd absolutely talked about the sludge issue more. But the main thing I wanted to point out, excellent article in The New York Times about tap water is legal, how it may not be healthy. And I just want to put a little quote here. Only 91 contaminants are regulated by the Safe Water Drinking Act --- or Safe Drinking Water Act. Sorry. So check that out. You can get online on for The New York Times. And Charles Abdalla who --- also was author interviewed by NPR today.

So I just want to --- I'll just close it up. As an important part of our democracy, we really

have to refrain from the influence of any of the individuals or industries who will be benefiting from the business deal to be participating in the rulemaking. We don't have to be the United States of Amnesia.

We just got through this with the banking industry. We just got through this with so many things where if the person who's in charge of making the rules is the person who's benefiting, we're the ones who pay the price. We may have energy needs, but there are other options, and our health should not be the last option, whether it's adopting the water from the Marcellus Shale issue, or refracing or dumping sewage sludge --- which for those who maybe don't know, it's not just our human waste, it's all industry, business, hospital, all of that squeezed and treated and tested for nine things before they're being put on your food source. So who's going to watch our wastewater with this Marcellus Shale when we've had a 30 percent cut in the folks who were supposed to watch it?

And so I think that's probably about my thing for the day. And I'm really --- I guess my final point is we have to protect the people, not the policy. And so I would say a moratorium on the

drilling, a moratorium on the wastewater treatment plants. And take care of our bodies before we take care of industry. Thank you.

MR. MANFREDI:

Thank you very much, Ms. Sicher. The next person is Jan Little.

MS. LITTLE:

Good evening. My name's Jan Little. And I'm at 6029 Helen Drive in Allentown, PA, 18104. And I'm here tonight to give key points on DEP's proposed changes to Chapter 95 wastewater treatment requirements. And I'm also a registered dietician. I'm licensed in Pennsylvania. And it's funny. When we develop diet patterns and work with our patients about their nutrition issues, one of the first things we talk about is water, you know.

And personally, when I'm dealing with this, some work dealing with oh, how many ccs should I recommend for doing tube feedings and that kind of thing for people who drink their water out of the tap. And I have to admit, I never think about these issues, I'm so concerned with how much. But it's definitely --- the safety of our water definitely is of high importance, through I know I'm speaking to the choir with you.

I am concerned about the effect of drilling in the Marcellus Shale on our drinking water which is an essential nutrient for our public. My four points, we need safe drinking water. I don't want to have to think about it like I'm learning to do tonight. DEP's proposal of 500 milligrams per liter for total dissolved solids and 250 milligrams per liter for each for sulfates and chlorides will go a long way towards ensuring our drinking water supplies will not have unsafe levels of TDSs and these other contaminants.

And I'm learning tonight, that may not be enough, that just to focus on those three items probably really isn't enough at the least to adhere to that safety level for those three. So DEP should not weaken the proposed discharge standards for total dissolved solids.

Two, we need these regulations to be in place as soon as possible to protect our rivers and drinking water. DEP should stop giving out more drilling permits, we've heard that tonight, until wastewater rules are in place. DEP should also stop allowing existing or proposed wastewater plants to pollute our rivers until we follow these new rules.

Three, DEP should add discharge standards

for those contaminants that are frequently found in the Marcellus Shale gas drilling wastewater. These include bromides, arsenic, benzene, radium, magnesium and possibly others. Many of the contaminants are toxic for humans and very difficult for drinking water systems to remove.

My daughter was in Philadelphia and it's really hard to hear about how these types of things go downstream into the City of Philadelphia, which we well know, uses chlorine to help make the water safe. And it's hard to hear that that's developing a whole other compound that's unhealthy for my daughter and 1,500,000 others that live in that city.

Four, DEP needs to ensure that all aspects of the generation of Marcellus wastewater are regulated. Currently there are no requirements to track wastewater from the drilling sites to treatment plants. And there is no oversight over the reuse of the Marcellus wastewater. Thank you.

MR. MANFREDI:

Thank you, Ms. Little. The next testifier is Larry Mankies.

MR. MANKIES:

Good evening. My name is Larry Mankies. I live at 741 Clifford Street in Warminster,

Pennsylvania in Bucks County. And I am a representative of CERCLAPA which was part of the Post Carbon Institute and now it's part of Transition United States. And I deal with energy and climate issues as well as some related issues. I am also with a number of other organizations in our area, including the Delaware Valley Regional Planning Commission, the Bucks County Chamber of Commerce's Environment Committee and my township's environmental advisory council.

I worked on a project in Bucks County which is one of the top tourist destinations in the United States. And we've been hit pretty hard in the recession as well as any other area. And this project goes from the Pennypack Creek on the Delaware all the way up through our township and Ivyland, and up to New Hope on the Delaware, which has suffered from floods and is in serious financial straits.

I know that energy is very important. But I believe that more important is the watershed that we all live and depend on. And this is a very serious issue. I know that energy is very serious right now. However, this is a nation that wastes at least a half to three-quarters of the energy we use. I am a building energy auditor. I know this for a

fact. I know just listening here.

And that's probably the first thing we should do about energy. Now, water is emerging as a great concern we have. A third of the water in the United States is already polluted badly. A third of it's threatened. And in this area, we had some of the last third of the best of water. And the Delaware River is certainly a tremendous resource.

Now, I'm not going to get technical with this. What we're seeing here is what they call the tragedy of the commons who profitize the profits and commonize the costs. This has been going on in this culture since they founded this nation, maybe even before that.

But I want to get back to the commonsense of this. We only have one planet. We only have one State of Pennsylvania. We only have one set of rivers and interconnecting watersheds. And the rivers and the streams are really the veins and the blood supply of this planet. And the oceans are threatening, and we really can't afford to make any more serious threats than we already have.

And I propose something that's very simple. I mean, since we're all in this together, I think there should be a way for all us to sit down, to

stop the process until we can agree on a safe and sensible way that suits everyone's needs, including the needs of my grandchildren and my great grandchild that lives in Lancaster County.

Now, this area has some of the best resources around for dealing with conflicting issues and demands. The International Institute for Restorative Practices is in this area. They have some of the finest people in the world for mediating and conflict resolution. And they do it in a way that really honors people.

And I think that there are better ways for both our regulators and our citizens and our businesses to come together rather than in a hostile way. Now, it's obvious to me in only a week of being involved in this issue that there is a lot of passion on the side of people that fear what's going on. And this is not a tolerable situation.

There is enough bad record of bad incidents to justify the fears. And this is something that we really can get together on. We don't need the energy. It's going to be more valuable as time goes on. We don't need it today. And we have the time to work this out. And this should, in all common sense, be worked out among us together, not through a

mediator like the DEP, which is doing a good job under the adverse circumstances that they are. This is something we really need to all get together on. And that's all I have to say.

MR. MANFREDI:

Thank you, Mr. Mankies. The next testifier is Katherine Lewis.

MS. LEWIS:

My name is Katherine Lewis Sarsfield. I live at 8120 Eastern Avenue in Wyndmoor, Pennsylvania, Springfield Township, Montgomery County. I am here as a Pennsylvania citizen and a mother of two young boys. I am also cofounder and director of a nonprofit environmental organization called Sustainable Springfield.

Sustainable Springfield is located, as I said, in Springfield Township, Montgomery County, which lies within the Wissahickon Valley Watershed. Sustainable Springfield has over 100 people who I have the great honor to represent here today.

Springfield itself is a small township just outside Philadelphia. We have roughly 8,000 --- I'm sorry, 18,000 residents. We mainly get our water from the Delaware River with some exceptions for residents that have wells. My family, like many

thousands of others living in my township and in the Philadelphia region, drink, cook with, bathe in and, in general, use the water we get from the Delaware every day.

We all rely on this source of water in order to live. And like many households, too, across this region, we cook and heat our homes with natural gas. But natural gas at what cost? At what cost are we willing to have natural gas heat our house and cook our food? Are we willing to have heat but not clean water? Are we willing to give up one vital natural resource for another?

A Native American once said in speaking about the Alberta Tar Sands that oil is money and water is life. And for us humans, all organic life, clean water is vital to our existence. It is the difference between life and death. Heating and cooking are mere comforts which can and, because of global warming, we should find alternatives to.

Clean water, on the other hand, is critical for us and our environment. I am not a chemist, but I do know public policy. I know what we are talking about here today is a choice for you, the policymakers, the Environmental Protection Organization, it is your choice between public health

and our environment and short-run economic profits.

When this Native American spoke about oil being money, it is true. We all realize that oil companies have a great deal of power and money here in the United States. Does that mean that they have the power to take our clean water away and pollute it?

In Pennsylvania, these companies have put up huge investments, probably millions of dollars in ad campaigns plastering the airways and print media with positive advertisements to sell Pennsylvanians onto natural gas drilling. These ads are all too surreal, especially when we examine the places that these companies have already been.

Gas drilling has devastated areas of Colorado and Texas, where people near wells have suffered serious health problems from hydrogen sulfide, methane and other gases, which are released during the drilling process. In Colorado there have been over 1,400 known leaks, of which 23 contaminates are in the water in the areas of the wells. In these areas, wildlife has also suffered because of contamination of the wells. In Fort Worth Texas, there have been four earthquakes since drilling began there. Now, here in Pennsylvania, wells have been releasing radioactive gases. Many people have already

spoken about all the horrible things that have already occurred. And yet all of this for short-run profits.

I say short-run because these companies will be gone in five years or ten years. But we will be left with the legacy. At what cost? But you --- well, we really, and DEP have an opportunity. We have an opportunity here today to have at least a beginning.

And Sustainable Springfield respects and supports the DEP's proposed limits as a beginning to limit the total discharge of solid levels in wastewater discharges. We ask that the DEP not weaken its proposed discharge standards for the TDS. We also ask that these regulations be implemented as soon as possible so that our rivers and drinking water may be protected.

Sustainable Springfield asks that the DEP stop giving out more drilling permits until wastewater rules are in place. We also ask that the DEP hold all existing or proposed wastewater plants to the new rules, i.e., no grandfathering.

We ask that the DEP add discharge standards for those contaminants that are frequently found in Marcellus Shale Gas drilling wastewater. They've already been mentioned but bromides, arsenic,

methane, radium, magnesium. Many of these contaminants, as we understand, are not able to be removed by wastewater management for drinking water.

We are relying on DEP to ensure that all aspects of this generation and Marcellus wastewater are regulated. We understand that currently there are no requirements to track wastewater and drilling sites to treatment plants. And there should be a record of responsibility, some sort of paper trail, of the quality of fracked water being transported, and signed receipts for each delivery.

There should be strict oversight. We know what happens without oversight. We've seen it here in Pennsylvania. You can see it across the country. And I speak for Sustainable Springfield. I speak as a citizen of Pennsylvania. I speak as a mother. And I say that we do not want this for Pennsylvania and our communities.

I will leave with one last quote, which is a quote ---. When the last tree is cut, when the last river is emptied, when the last fish is caught, only then will man realize that he cannot eat money. Thank you very much.

MR. MANFREDI:

Thank you. The next testifier is Leah

Zerbe.

MS. ZERBE:

Hello. My name's Leah Zerbe and I am a resident of 702 Mountain Road, Pine Grove, PA. Thank you for holding this hearing. Like I said, my name's Leah Zerbe and I am a resident of Schuylkill County, a place that was once home to a thriving coal industry.

Most of the local coal companies have pulled out long before I was born. But even today, decades later, you can see the damage unchecked fossil fuel exploration that was created. The industry is gone but we, the taxpayers, are stuck with the orange streams, the tainted wells and the bill to slowly try to clean up. And we're also paying for this pollution with our health.

Speaking from experience living in coal country and knowing the high price we pay for extracting fossil fuel energy in an unchecked and reckless way, I urge DEP to stop issuing all gas permits immediately and to not reinstate the permitting process because there are no discharge standards in place at this time for the total dissolved solids, chlorides and sulfates.

With the recent news that Exxon is jumping into the natural gas game, it's clear that

Pennsylvania is going to become ground zero for natural gas drilling. DEP cannot justify risking the safety of millions of people's drinking water to create jobs. That's why you need to stop the permitting process until strong discharge standards are in place.

Using the fracing process, the only way to drill for natural gas in a cost-effective way here, natural gas companies will be exposing millions of people to the potential 200 plus contaminants used in the process, including pesticides, radioactive material and other carcinogens.

Research from all over the world has found that even low levels of these contaminants in drinking water can lead to an increased risk of birth defects, miscarriage, developmental problems and cancer. DEP, please halt drilling until strict rules are put in place and enforced to protect health.

In closing, I'd like to say that fracing for natural gas is energy-intensive, polluting and it's anything but clean. While the flame that burns on our stovetop might be, the inefficient drilling methods are polluting clean water with a cocktail of 200 chemicals. DEP's job isn't to be green-washed by industry. It's to protect the environment and all of

us who live here.

MR. MANFREDI:

Thank you. The next testifier is Erin Crump.

MS. CRUMP:

Hi. I'm Erin Crump. I live at 1440 Granary Road in Blue Bell, Pennsylvania. I'm the founder of a local environmental group in the Wissahickon Valley Watershed called Wissahickon Growing Greener. I use gas to heat my home and cook my family meals. I drink the water from my faucet and I give my children a bath before they go to sleep.

Over the past few weeks, I've been educated on the horrors caused by the process of hydraulic fracturing for natural gas, not just in my state but all over the country. Not long ago I learned of the Halliburton Burton loophole in the 2005 energy bill. I'm appalled that this loophole exempts oil and natural gas industries in the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act, the Superfund Law and others.

I recently learned of the plans to drill for natural gas in the Marcellus Shale in Pennsylvania and I have become aware of how these plans could directly affect the health of people in my community

as well as the millions of other lives across Pennsylvania.

I've become informed about the method of hydraulic fracturing. This process blasts water and tons of sands and chemicals some 8,000 feet into the ground to fracture the Marcellus Shale and release natural gas. There are over 200 chemicals used in this process, chemicals that are endocrine disruptors, carcinogens, neurotoxins and many other toxic additives present in the fracturing liquid.

The companies doing the drilling are not required to disclose the names of all the chemicals. Instead, they list them are proprietary components. One to five million gallons of water is used each time a well is drilled. And that same one to five million gallons of water is used each time they frac again, up to 18 times.

If there are only 1,600 wells in Pennsylvania, that's 1,600 wells times one million gallons of water times 18 times. And that's almost 29 billion gallons of water infused with this toxic fracturing liquid. And this estimate's on the low end.

One of the most bothersome contaminants of wastewater is a gritty substance called total

dissolved solids, or TDS, a mixture of salts and other minerals that lie deep underground. Drilling wastewater contains so much TDS that it can be five times as salty as seawater. Gas companies currently dispose of their wastewater in Pennsylvania's municipal sewage plants, which is then discharged into rivers and streams.

In an October 2008 press release, the U.S. EPA warns against this form of treatment because the plants aren't equipped to remove TDS or any chemicals the water may contain. Of even more concern, TDS can disrupt the plant's treatment of ordinary sewage, including human waste.

Now, where are they going to get the water for all this fracing? It'll be taken out of our precious freshwater resources. We are fortunate to still have fresh water here. But billions and billions of gallons of it will be taken for the fracturing process.

Where is all the fracing liquid wastewater going to go? It'll be stored in containers or lined pits and then trucked away. Will these containers leak? Will the liners leak? Will the chemicals evaporate into the air and blow in my direction? Who's going to make sure they won't? And

if they do, who's going to make sure the chemicals are clean?

Are the municipal sewage plants to continue taking drilling wastewater, even though none of them can remove the TDS? Will it be dumped in the Delaware River to be diluted to a safe level? If we don't know what's in the fracturing liquid, how can we maintain the dilution will be safe? We can't monitor for chemicals if we can't identify them or their concentration. This wastewater's going to get into well water, aquifers, streams and contaminate the water we bathe our children in, the water we put in their glasses to drink.

We know this is going to happen. It has already happened across the United States and in Pennsylvania. As recently as November, DEP officials reportedly fined Capital and Oil. We just heard this tonight. Because its natural gas drilling operations polluted 13 water wells in Susquehanna County, PA. Once the frac water migrates from the surface to the water table, there's no easy way to prevent the spread of contaminants.

George Zimmerman in Washington County, PA, said that Atlas Energy ruined his land with toxic chemicals used in or released there by hydraulic

fracturing. There are suits being filed for claims for residents in many gas drilling areas in the United States that fracing pollutes private water wells with toxic chemicals and threatens widespread contamination of aquifers from which many households draw their drinking water.

Soil samples there detected mercury and selenium above official EPA limits as well as ethylbenzene, a chemical used in drilling, and trichloroethylene, a naturally-occurring but toxic chemical that can be brought to the surface by gas drilling. Rural residents who live near gas drilling say their water has become discolored, foul-smelling or even flammable because methane from disturbed gas deposits have migrated into their well.

DEP is proposing changes to Chapter 95, which would limit TDS levels in wastewater discharges because it determined that some state waterways don't have the ability to absorb the increased levels of TDS. According to a Penn State report, most of the water used to prepare gas wells is between 800 milligrams per liter TDS and 300,000 milligrams per liter of TDS.

The industry estimates the amount of such high TDS wastewater being disposed in Pennsylvania will

increase from about 9 million gallons per day in 2009 to nearly 20 million gallons per day by 2011.

So I say this. We need to stop, think and evaluate the situation before we head down a road we can't turn back. Stop giving these permits to drill until we know what chemicals we're dealing with, their concentration, how this chemically-laden wastewater will be dealt with responsibility. We have enough tumors, enough respiratory issues and enough cancer. What we need is a plan, a well thought-out plan. One that learns from the history of water contamination and health risks in Fort Worth, Texas, and Rifle, Colorado. One that says clean water does not ignite from methane. I am not asking that we don't drill. But I am asking for a safer method of production and disposal of wastewater.

Thank you, DEP, for trying to change Chapter 95 and require high TDS discharges to be diluted to at least 500 milligrams per liter. But it's not enough. Other contaminants are in the Marcellus Shale gas drilling water that we know about, like arsenic and methane. What about the others we don't know about because of the Halliburton loophole and the lack of disclosure from these drillers? What about the radioactive materials? What about the air

pollution? Think about the 800 gallons of diesel fuel needed to run each well every day. What about the noise pollution, the destruction of forested areas and the increased erosion? What about the inability of fish to survive such high TDS in their water?

This is not someone else's problem. This is my problem. This is our problem. Let's find ways to reduce the amount of natural gas that we use. Let's make our homes and businesses more energy efficient and supplement energy use with solar or wind power.

By your own accounts, the DEP's Bureau of Oil and Gas Management regulates the safe exploration, development and recovery of Marcellus Shale natural gas reservoirs in a manner that will protect the Commonwealth's natural resources and the environment. Your plan will be acceptable when you are able to reach for a nice, tall glass filled up with treated wastewater product and then let your children drink it. Thank you.

OFF RECORD DISCUSSION

BRIEF INTERRUPTION

MR. MANFREDI:

The next testifier is Faith Zerbe.

MS. ZERBE:

My name is Faith Zerbe. I reside at 379 Upland Way in Drexel Hill, Pennsylvania. And I'm also a biologist with Delaware River Keeper Network. I spend a lot of time in the streams. And everybody's done such a great job about talking about the statistics and the pollution that we have caused. And I thought I'd commend everybody who is not a scientist who really has a good grasp of the issues at hand.

Tonight I want to do more of a personal story and then get into a little bit of the statistics. I grew up in Schuylkill County as well. My sister Leah talked a little bit earlier. My two grandfathers were coal miners. My one grandfather died of black lung because the coal mining industry didn't have the right respirators at the time. And my other grandfather, when they brought in the pillars, as it was called, up in the coal mining region in anthracite, he hit a pillar. It got too thin and it caved in and it killed him instantly. So we have sort of a personal tragedy or tragedies in our family.

But in addition to that, I grew up where the streams were orange; right? We have iron pirate in those areas. We have manganese and aluminum. Even when you have a stream that's crystal clear and you think it's beautiful, when you actually go in and you

pick up the rocks to look at the little critters that live there, the bait for the food chain for our fish, they're not there. They're not present. They're gone. The stream is sterile. And that's where I grew up; right? Where my mom said Faith, you can't be playing in that stream, it's not allowed. That's where I started my days. And I did bring again --- and someone talked eloquently about it. But I did bring a picture of the typical, you know, orange streams in Schuylkill County. This is an example. We have a lot of groups, Headwaters Association, Eastern Pennsylvania Coalition of Abandoned Mine Reclamation, working really hard to clean up these streams. This is an example of a case where a citizen wants to have $20 million. He wants to try to put in a plant to treat the iron oxide coming out into the river, $20 million.

And people have spoken so eloquently about the impact. Again, the common, we're cleaning it out. The communities are there. But I want to say is our lives and our community are not without corporate interest. Other than a town that's now depressed --- we have lots of bars and pubs. Yeah, it was a big anthracite boom in the day. And now what's left?

And the really degrading part is I don't have a say in it; right? I was a child. These decisions were made. And in a lot of cases, the people are saying hey, there were holes back there. Its abandoned mine drainage even though the companies are still certainly working and they've just moved to different areas. But there were really no --- there were no regulations in place.

So now here we are again. We have the same issue coming up; right? The same issue. We have this history. Pennsylvania has a history. And everyone's talking about it. Everyone that's sees this saga has lived it in some way or another. And what we're seeing now in the upper and the middle Delaware; right, as a biologist, I go out to these streams that are proposed in these areas. And the diversity of these streams are amazing. Pennsylvania has 86,000 stream miles. That's really more stream mile than any other state besides Alaska, 86,000 miles.

And of that, we have what's called High Quality streams and Exceptional Value streams. Those are supposed to be the cream of the crop streams. Those streams that through the Clean Water Act and through anti-degradation are not to decline in

quality. And in this same areas, in the upper Delaware and middle Delaware, these high quality streams is the place where the Marcellus Shale is underlaying.

So other than Philadelphia, I've lived in places where we see stormwater issues. We see a lot of basic quality problems. But when I got up to the upper and middle Delaware, it really is still the cream of the crop. And this is where we're going to be drilling for natural gas. And it's absolutely unacceptable.

And the TDS standards, yes, this is a step in the right direction but we need stronger TDS standards. And in those areas, if we are drilling in those areas and we have the brine --- the woman before me spoke very eloquently about 800,000 to 300,000 TDS in the brine that could be the least, which we've seen in places like Dimock already. We need to have a better aquatic life standard. Again, anti-degradation requires the state to protect both High Quality and Exceptional Value streams for the critters that live there too in addition to our drinking water with the 500 milligrams per liter.

We've seen some studies, juvenile fish, I believe it was striped bass, there was an EPA study

that was done. And they found that juvenile fish, when you has TDS levels of 350 milligrams per liter, they weren't able to reproduce successfully. So we need stronger standards and we need an aquatic life standard.

We certainly need a moratorium. Everyone spoke so eloquently about that. And I hope we all build together, team up together. We can do this. Outside there are some River Keeper fact sheets. There is Clean Water Action fact sheets. Please sign up if you haven't been part of that group. And together we can hopefully get good standards. Thank you.

MR. MANFREDI:

Thanks. The next testifier is Ann Dixon.

MS. DIXON:

I'm Ann Dixon. I live in Philadelphia, 4523 Osage Avenue. I'm here with a group called Protect Our Waterways, but I'm speaking only for myself tonight.

I have a gas stove and I heat my house with gas. And I'm grateful for it. Gas drilling is bringing in some much-needed dollars to a few people. After years of doing without, people who have drilling on their property can now pay bills easily and save

some money.

So that's the plus side of drilling as it's currently done, convenient heat and some money, which is important. On the negative side of drilling, how it's currently done, is death to human beings due to massive water pollution. The many negative things that people do to nature won't be felt for decades. But this issue is immediate. At least one person has already died.

All drilling needs to stop until regulations are in place to protect drilling waters. I mean drilling should stop today. Now. Simply diluting our solid wastewater doesn't work. The DEP's proposal of 500 milligrams per liter for total dissolved solids will help. That's good. And wastewater needs to be tracked from drilling sites to treatment plants.

Are there any Environmental Quality Board members here tonight? One person? I thought you were for the Advisory Board. It's the same?

MR. MANFREDI:

The Citizens Advisory Council to DEP is 18 appointees, 6 from the governor, 6 by the Senate, 6 by the House. So I am a governor appointee. Of those 18, they elect five citizens to the Environmental

Quality Board to go along with the other members of the Environmental Quality Board. I am one of those citizens sitting on the Environmental Quality Board. And I'm here this evening to chair this hearing and listen to what you have to say.

MS. DIXON:

Okay. That is fine. One person. Is there anybody else from the DEP here tonight? Thank you for coming. I really appreciate it. So what I would like to say to both of you is I'm sure that you're under pressure from gas company officials to keep the status quo. I feel you. So do something nice for yourself. Stand up and be a hero. Stand up and be a hero. Save the people you serve from polluted water death by keeping our drinking water safe. Thank you.

MR. MANFREDI:

Thank you, Ms. Dixon. Next testifier is Sandra Folzer.

MS. FOLZER:

I'm Sandra Folzer. I live at 101 Maple Avenue in Erdenheim, PA, which is in Springfield Township. So I'm part Sustainable Springfield. Let's see. I guess I want to start with --- I don't want to repeat because people have been very good about so

many different points.

I'm here because I believe that water is so, so precious. And I am deathly afraid of the future. I read the paper. And I looked at today's paper. The front of The New York Times, as someone already mentioned, was an article about water and how just because it's legal doesn't make it safe. I would say at least once a week on the head, front page of The New York Times is an article about water shortages or water problems.

Not only do I live here in --- you know, near --- outside of Philadelphia but I also have a farm in upstate Tioga County. And I want to tell you that the summer before last my neighbor, who is selling leases, who visits me often, wants me to sign, and a year ago last summer he was saying please sign. He said it's only for five years. He said I'm in the business. He said I can tell you, we aren't going to be drilling for a very long time. It's perfectly safe. We'll just make money. Well, I never signed. I could have made a quarter of a million dollars. I didn't sign because I was afraid.

Already this summer, you know, these wells are popping up so fast. I think the gas companies know that their time may be short. And if

you didn't believe in this cause before, you really need to see one of these wells or see the pollution that they caused. They look like a disaster site. Some people have described them as super --- every gas well is a potential superfund site. And I think that's true. And of course, you know, who's going to be paying for it? They have these open pools because they don't have any place to put all this polluted chemical waste. It's not even water. We call it wastewater but it's really industrial fluid. And I know that in holding tanks friends have said that they've seen them just leaking. And they erode and they go into the streams. They're already doing a lot of pollution. And of course they assure you that they're perfectly safe.

By the way, I know that some people have said that this is a boom for Pennsylvania because it's bringing a lot of business in. The study that that was based on out of Penn State was a flawed study. The people who did the study were paid $100,000 by the gas industry. It is not an accurate study. And when they talk about bringing jobs in, we know all the states and our neighbors talk about the people coming in from Oklahoma to do these jobs. So take the business wealth that we're going to get out of this

with a grain of salt.

Probably --- of course, I strongly recommend that we stop giving permits, that we hold to the standards. And I really appreciate the time that you gentlemen give for these hearings. I think that we should even put a moratorium. I know that 1,600 permits have already been granted. That's a lot. They can do a lot of damage.

So I just have one little thing. I have --- I thought you would appreciate some visual effect. So I'm going to do something here; okay? I brought a --- okay. What we have --- can you hear me? Okay. We have here --- I have some wonderful fresh water that came out of the tap right here in Allentown. And in the rest of my little bag here I have a little arsenic and I have a little benzene. Perfectly safe; right? I mean they say it is safe.

And so what I've done is diluted it. So I'm just putting a tiny drop. So this will be very much like the water that you and your grandchildren, your children will be drinking. So I'm just going to put a teeny, teeny bit; okay? So it's diluted.

And when I visited the EPA a couple weeks ago, they said don't worry. Everything's going to be diluted, it's not a problem. And I said how many

parts per million are safe? Well, we don't know. So anyway, I'm just putting a teeny bit. Now, this one is the arsenic. And remember that there's a lot of salts in it too. So we have to put a little bit of salt. I didn't bring my whole big salt thing. So I just brought a little bit if you can see it. I won't even put it all in, okay?

All right. So here we go. Now, anybody who opposes these standards, who would like to have a drink? This is what your children and your grandchildren are going to be drinking. Okay. So that's all that I want to say. Thank you again for your time. Nobody wants a drink of water?

MR. MANFREDI:

Thank you very much. We have three people left. And before we go on to the final three people, I want to first of all go back to the beginning. Did Mr. Don Williams ever arrive? Is there anyone else who would like to testify and sign up at this time who has not? Okay. And I just want to say one more time that if anyone wishes to submit any additional testimony or submit in writing testimony, please feel free to do so by February 12, 2010 deadline. Those comments should be addressed to the Environmental Quality Board, P.O. Box 8477,

Harrisburg, PA, 17105-8477. And again, we do have some people left and I wanted to --- before everyone left, wanted to make sure ---. The next testifier is Iris Marie Bloom.

MS. BLOOM:

Good evening. It's a long evening. I appreciate every person in this room for our combined, collective commitment to clean water and also to clean air and clean land. My name is Iris Marie Bloom, B-L-O-O-M. I live at 4808 Winsor Avenue in Philadelphia, Pennsylvania, 19143. So I'd like to make just a few comments about the bigger picture of Marcellus Shale drilling and then come back to specific comments about the Chapter 95 regulations that we're all here for tonight.

I think that we haven't yet really looked at the big picture of where all this water is coming from. The numbers that I have heard are that it would take something like 32 trillion gallons of water to frack all the wells that are anticipated to be drilled in the Marcellus Shale region. It's a region. Its four states. That's a lot of water. That's the amount of water in the Great Lakes. That's ten percent of the water the United States uses every year. That's for one fracing. Most wells are fraced

one to ten times.

So why are people like me trying to do the math on this? I need to fact check this. We need an EPA cumulative impact statement for the region. And we need to demand it for our state, for Pennsylvania. The EPA will do a voluntary environmental impact statement. We should insist that we get that impact statement before any more drilling occurs.

Another thing in terms of the overall, big picture of Marcellus Shale drilling issues is that the methane emissions are huge. Currently methane contributes one-third of global warming. One-third is methane. So this drilling is going to increase that by at least 20 percent. That's according to the Department of Energy, you know, radical organizations like that. The New York Times reported this on October 15th, 2009. I thought we wanted less global warming. Call me confused. And that's just the methane emissions alone from routine gas drilling operations.

So we're not even talking --- that doesn't even include the massive leaks. And a lot of the technology is just to control those emissions but it's not being used because it doesn't have to be

used. Because the Clean Water Act, natural gas companies are exempt from that as well. And the Clean Air Act as well. It's been a long day.

I just want to also say that although I am especially passionate about my watershed, the Delaware Watershed and Schuylkill Watershed because that's where my drinking water comes from, none of the watersheds in the state are expendable. They're all special. Every single watershed, every creek, every river, every tributary, each have very special characteristics.

And just to name a few very briefly, Monongahela, 350,000 people drinking water. Susquehanna, Chesapeake Bay, that would be --- we've already talked a lot about the Delaware and Schuylkill Rivers. None of these watersheds are expendable in any way.

I want to mention that I am part of Protecting Our Waters, which is a Philadelphia grassroots group which is growing right now. Then one other --- two other little items are that --- you know, when we talk about Marcellus wastewater, there's a plan for New York State in the supplemental draft general environmental impact statement in New York State. It says we don't want to treat or discharge

any Marcellus Shale wastewater in our state. We're going to send it elsewhere. And elsewhere means Pennsylvania.

I just want to say as a Pennsylvanian, I don't want any New York State Marcellus Shale wastewater. We can't deal with our own. We can't deal with 19 million gallons of Marcellus Shale wastewater that we are generating.

So finally --- sorry. I just sit there trying to think of more things to say because people say great things and --- somebody said every gas well is a potential superfund site. That's a good thing, a superfund site. So the gas industry is exempt from major provisions of the Superfund Law. So if that is the case, who's going to clean it up?

So in terms of the legislation at hand, the DEP regulations, I am strongly in favor of strengthening, not weakening, the DEP proposed standards. We need safe drinking water. I don't know how to calculate the difference between 500 milligrams per liter versus the 350 parts per million of TDS that Tracy and Faith from Delaware River Keeper Network are saying have negative impacts on fish. So I want the standard reproduced. So I don't know how to do that translation but I think ---.

UNIDENTIFIED SPEAKER:

They're equivalent.

UNIDENTIFIED SPEAKER:

They're the same.

UNIDENTIFIED SPEAKER:

Milligrams per liter are the same.

MS. BLOOM:

Oh, they're the same? Okay. So I think it should be below 350 parts per million. We need life for the fish. We need aquatic life. That's the basis of our life. So I think we need to strengthen and not weaken those standards for TDS and the sulfates and chlorides. Absolutely no more drilling permits until adequate standards are in place. Not one. Not one more. We have too many already. The permits in place should be rescinded.

Furthermore, the wastewater that is being accepted by wastewater treatment plants to, quote, treat it, which means generally to dilute it, must have zero levels of chemicals. These are chemicals that are known to be in fracing fluid in Pennsylvania. It's been reported. The DEP and the EPA have been investigating this as was reported in the River Reporter of December of '08. So all of these chemicals have severe toxic effects on human health.

Wastewater should have zero levels of 2-butoxyethanol, ethylhexanol, formaldehyde, glutaraldehyde, boric acid, ethylene glycol, methanol, monoethanolamine, dazomet, acetic anhydride, isopropanol, propargyl alcohol, 5-chlor-2-methyl-4-isothiazotine-3-one, sodium bicarbonate, diesel, hydrochloric acid and people have mentioned some of the others.

So sadly, I'll need to remember the names of these things because we're not protected by federal regulation. We're not protected by state regulations. We have to protect ourselves. So none of those chemicals, zero chemicals, zero of these chemicals in our water, and the other 200.

I just want to support the other points that people have made just very briefly. To add the discharge standards for Marcellus Shale, contaminants including bromides, arsenic, benzene, radium, magnesium and others. I just listed some of the others. We also need to create oversight for the reuse of Marcellus wastewater.

And what is this about draining it on roads? This is insane. So I know this is about wastewater discharge standards but we have to --- we have DEP in this room. We can't have any of this toxic sludge sprayed on our roads. So no more

drilling and none of this insanity. Thank you.

MR. MANFREDI:

Thank you, Ms. Bloom. Mr. Garber, M. Garber? Not yet. I just wanted to let you know I saw your name. So you aren't going to get skipped.

MR. GARBER:

Okay.

MR. MANFREDI:

Thank you. The next testifier is Joy Tetlak-Adelstein.

MS. TETLAK-ADELSTEIN:

Hello. I'm Joy Tetlak-Adelstein and I live at 119 Everhart Street in DuPont, Pennsylvania, in Luzerne County. And I'm testifying today on behalf of Citizens for Pennsylvania's Future.

Citizens for Pennsylvania's Future, or in other words, Penn Future, is a statewide public interest membership organization with offices in Harrisburg, Pittsburgh, Philadelphia, West Chester and Wilkes-Barre. Penn Future's purposes include advocating and litigating to protect public health and environmental quality across the Commonwealth.

Penn Future supports the EQB's proposal to amend 25 PA Code Chapter 95 to establish effluent standards for new sources of wastewaters containing

high concentration of total dissolved solids or TDS We also urge the EQB to extend those proposed standards in two ways. First, by eliminating the applicability thresholds of 2,000 milligrams per liter of 100,000 pounds per day. And second, by making them applicable to existing sources through the addition of a transition scheme.

Pennsylvania's rivers and streams provide billions of dollars of direct and indirect economic benefit to the Commonwealth's families, farms and industries. Recent developments have shown such benefits to be threatened to a greater extent now than perhaps at any time since the Clean Water Laws were strengthened in the late 1960s in response to then-existing pervasive industrial pollution.

The new threat comes from wastewaters from manufacturing, abandoned and active mines and gas drilling operations that produce wastewaters laden with TDS, which consists mainly of a variety of salts. In late 2008, high TDS levels in the water of the Monongahela River south of Pittsburgh threatened to shut down industries that are dependent on the river's fresh water for their operations, and affected the taste and smell of the drinking water supply to approximately 330,000 people in the southwestern part

of the state.

The Mon was already burdened with high TDS levels due to discharges from coal mines and industries, and became overburdened when the extremely high TDS wastewater produced by gas drilling operations added to the mix.

More recently, in August and September of 2009, the discharge of high TDS water into Dunkard Creek from coal mines in West Virginia and Pennsylvania created conditions that virtually wiped out the streams mussel population and caused a massive kill to fish and salamanders.

Over the next several years, development of the natural gas bearing shales in Pennsylvania threatens to exacerbate the problems experienced in Mon and Dunkard Creek and to extend then to other rivers and streams throughout the Commonwealth.

Penn Future agrees with the conclusions of the Pennsylvania Department of Environmental Protection that it cannot protect the quality of rivers and streams in this Commonwealth and still approve any significant portion of the pending proposals and applications for new sources of discharge of high TDS wastewater that includes sulfates and chlorides, or continue to allow the

emission to be used as the principal method of treating wastewaters containing TDS.

However, contrary to the Department's apparent belief that currently no treatment exists for TDS, sulfates and chlorides other than dilution, there are several currently-available treatment technologies that can be used to meet the limitations in proposed Section 95.10.

Much of the high TDS wastewater generated by sources other than Marcellus Shale gas extraction can be treated by reverse osmosis. The reverse osmosis is successfully used in thousands of facilities around the world to extract solids from seawater, which typically has TDS levels of approximately 35,000 milligrams per liter, so that it can be used for drinking and household purposes.

Although reverse osmosis and other conventional treatment technologies will generally not be suitable to treat the extremely high TDS wastewater often produced by Marcellus Shale gas extraction, G.E. Water & Process Technologies and other companies are advertising brine concentration, crystallization, vapor compression evaporation and other distillation technologies that are claimed to be suitable for treating high TDS wastewater from shale gas

extraction.

Indeed, on just this past Saturday in the Kittanning Leader Times newspaper reported that a joint venture formed by two companies based in Kittanning was able to perform onsite treatment of Marcellus Shale wastewater at a site in northern Butler County using the patented treatment system at a cost of about $6 a barrel or 14 cents per gallon, a cost that would seem to be economically feasible.

Penn Future believes that by limiting the TDS levels of discharges into Pennsylvania's rivers and streams from these resources, the proposed amendment to 25 PA Code Chapter 95 will permit the Department to begin addressing the threat that TDS poses to Pennsylvania's rivers and streams.

The proposed effluent standards will help ensure that the cost of protecting the state's streams and rivers from contamination by TDS will be borne by those who generate the contaminants rather than by those who are dependent on the clean water from rivers and streams for recreation, agriculture, industrial uses or drinking water.

The proposed amendments to Chapter 95 are a good starting point but they must go farther if Pennsylvania's rivers and streams are to be truly

protected to the degree guaranteed under Pennsylvania's Clean Streams Law and the Federal Clean Water Act. The proposed effluent standards for new discharges of high TDS wastewater should also be extended in two ways.

First, the concept of high TDS wastewater and the related applicability thresholds of a TDS concentration of 2,000 milligrams per liter or a loading of 100,000 pounds per day should be eliminated. This change would be consistent with other technology-based treatment standards. It would also eliminate an inconsistency that the regulation will permit in its current formulation.

Facilities that discharge very low volumes of wastewaters at concentrations above 2,000 milligrams per liter will be required to treat the discharges to 500 milligrams per liter even though the TDS load added to receiving streams might be relatively insignificant, while facilities that discharge high volumes of wastewater at concentrations less than 2,000 milligrams per liter will not be required to treat even though the amounts of dissolved solids that are added to receiving streams might be significant due to the high volumes of the discharges.

Second, the proposed effluent standards

should apply to existing sources, whether national pollution discharge elimination system permits are renewed or modified. Extending the effluent standards to existing sources will not only reduce the amount of dissolved solids discharged into the Commonwealth's rivers and streams but will also level the regulatory and economic playing fields between new and existing sources of TDS wastewater.

Making all sources play by the same rules would ensure that the cost of protecting the quality of Pennsylvania's rivers and streams is not borne disproportionately by the industries and operations such as the burgeoning shale gas industry, which is expected to provide thousands of new skill jobs and huge direct and indirect economic benefits in Pennsylvania in the coming years.

Further, by extending the effluent standards to both existing and new discharges of TDS wastewater, we will strengthen the demand for treatment solutions and technology. Penn Future is confident that the market will respond with suitable, low-cost treatment methods which should position Pennsylvania to reap further job creation and other economic benefits of being a leader in supplying new treatment technologies, both in the United States and

around the world.

Penn Future will submit additional written comments on various details of the proposed rulemaking. In general, we believe the proposed changes, in addition to Chapter 95, are a positive first step for Pennsylvania citizens, farmers and industries. But instead of being limited to new sources of high TDS wastewater, the new effluent standards should apply to all sources of wastewater containing TDS. They should be applied immediately to new sources of TDS wastewater without triggering thresholds and they should be extended to existing sources of TDS wastewater upon renewal or modification of the source's NPDES permit. Thank you.

MR. MANFREDI:

The next testifier is Amy Wilson.

MS. WILSON:

My name is Amy Wilson and my address is 4811 Chester Avenue in Philadelphia, 19143. I work with Energy Justice Network, but tonight I am testifying as a citizen.

My name is Amy Wilson and I am here as a Philadelphia resident and one of 15 million people who relies on the Delaware River for water. I'm testifying because I believe that Philadelphia's water

supply and the water supply of millions of others would be put at risk by natural gas drilling in the Delaware River Basin.

Discharges of high total dissolved solids and hundreds of other chemicals inadequately treated in natural gas wastewater treatment plants threaten our health and communities. Last April, I began following news stories about natural gas drilling in Pennsylvania. In quick time, I learned that though natural gas is often lauded as a clean transition fuel, the processes of extracting natural gas and of disposing of the hydrofracing wastewater have had severe impacts on the communities and waterways surrounding the processes.

The Department of Energy found flow-back from natural gas wells ten times more toxic than from offshore oil well drilling. And since January of 2005, 140 natural gas drill sites in Texas have required decontamination and cleanup. This contamination was due to the radioactive materials present in the flow-backs from horizontal natural gas drilling, the same type of drilling used to extract natural gas from the Marcellus Shale formation.

With increased drilling, this contamination will also come to Pennsylvania. In

Pennsylvania, more than a quarter million people reliant on the Monongahela River for their water have been warned to use bottled water because of high total dissolved solids levels.

I thank the Department of Environmental Protection for proposing regulations that set science-based standards for total dissolved solids discharges. These standards cannot be weakened and must be implemented as soon as possible.

The proposed regulations can mark the beginning of a thorough effort to set standards and processes to further protect citizens' health and the ecological integrity of our state. Pennsylvania is a Commonwealth state. Our collective or common wealth can be calculated by assessing the resources we share. Chief among these are safe waterways. We need strong standards to protect this invaluable natural resource and maintain Pennsylvania's ecological wealth now threatened by untrapped and unregulated natural gas fracing fluids. Ph.D. Theo Colborn's 2008 study, Analysis of Chemicals Used in Natural Gas Production, found that fracing fluids contain over 200 different types of chemicals, 95 percent of which have adverse side effects, including brain damage, birth defects and cancer.

In September of this year, an estimated 8,000 gallons of fracing fluid spilled in Dimock Township. After the fluid seeped into nearby waterways, the DEP reported a massive fish kill.

We need state standards to prevent this type of water contamination. The state agency, Pennsylvania's Department of Environmental Protection, should test for all chemicals known as common ingredients in fracing fluids. This must include testing for carcinogenic chemicals, such as benzene, known to be part of the fracing fluid mixture.

Until such standards are in place, all drilling must be halted. To ensure the safety of millions of citizens, the gas industry must be held to far more demanding standards. We need the natural gas industry to report all fracing fluids and to assess and report the cumulative impacts of gas extraction and frac water discharge. We need the gas industries to monitor all drilling, all drilling wells and to provide alternative analyses, including a worst-case scenario analysis. Until these requirements are in place, all drilling must be halted.

To maintain the integrity of our ecological surroundings, we must stop all drilling in wetlands and flood plains. Hydrofracing is an

extremely water-intensive practice. Each frac requires tremendous amounts of water, ranging between two to nine million gallons. Roughly half of the --- this water remains deep underground and does not return to the watershed. Extensive water withdrawal had already de-watered streams in western Pennsylvania. Until reasonable water withdrawal limits are put in place, all drilling must be halted.

Just a few weeks ago on December 7th, I traveled down to West Virginia. I stood outside the West Virginia Department of Environmental Protection headquarters for several hours in the cold, listening to speakers from all backgrounds and locations speak about the social and environmental havoc wrought by mountaintop removal. Speaker Maria Gunnoe, 2009 Goldman Environmental Prize winner, described one effect of coal mining that connects deeply and directly to natural gas drilling. That effect is water contamination.

Coal extraction has contaminated streams and rivers. It has made drinking water undrinkable. It has proved an insurmountable obstacle to some and for others it has become the most stressful problem in their lives.

When speaking, Gunnoe recognized West

Virginia's need for jobs and prosperity. But she first recognized the fundamental need of a community to have clean drinking water. She spoke to a crowd of several hundred clean energy advocates and a similarly large crowd of countraprotesters.

She stated the people of West Virginia definitely need jobs. But the people who think jobs are more important than water have not had to live without water. I challenge you. You think it's hard to live without a paycheck? Try living with quart jars over your water faucets. Try living with nothing to give your children to drink. A paycheck is not important when you don't have water for your children.

Though Pennsylvania does not have mountaintop removal mining, I think that we would be wise to heed the warning of Maria Gunnoe, a woman who has tried to live without clean water. We must work proactively to protect our waterways and drinking water. Natural gas drilling endangers our water, air and ecosystems. But it should not. It should be halted until serious science and justice-based regulations are enacted. Thank you.

MR. MANFREDI:

Thank you, Ms. Wilson. Adam Garber.

MR. GARBER:

You get to go last.

MR. MANFREDI:

No, actually there's one other person. Were you looking for the last one?

MR. GARBER:

No, I was just, you know, was going to try to make it funny because I was the last person on the list. I don't really actually think it's that funny that you're talking about arsenic and toxic chemicals. I'm not sure how I would've done with that. But I'll try and be quick.

I'm Adam Garber. I'm with Penn Environment. We're a citizen-based statewide environmental group. Our address for the office I work out of is 1420 Walnut Street, Suite 650 in Philadelphia, Pennsylvania. We have about 15,000 members across the Commonwealth who are concerned about the environmental impacts and the water impact that everyone's been talking to tonight --- about tonight.

I'm not going to talk anymore about the Marcellus Shale. I just actually want to go through a few technical things maybe because I think everyone else has spoken really well about the problems this poses, the personal stories we've heard.

I think there are a few other things we need to be concerned about with the regulations themselves, which overall we are supportive of and excited that they're moving forward hopefully to actually regulate the wastewater, and it's a first --- a good first step.

So the first is that DEP's proposal of 500 milligrams per liter for TDS and 250 milligrams per liter each for the sulfates and chlorides go a long way to ensuring federal drinking water standards are met across the state. We ask that the DEP not weaken this proposed standard. And additionally, we believe that TDS standards should be stated as a daily maximum, not a monthly average as it currently is in the proposed regulations.

We also agree with DRBC's requirement that the discharges do not cause background instream TDS concentrations to raise above 133 percent of background levels. Similarly, we would like to see the 2,000 milligrams per liter concentration threshold stated as a daily maximum.

Again, the problem with the daily maximum is that if it's an average, you could have one really, really bad day clearly, polluting the water and affecting the stream in a major way because they could

just dump all the wastewater in a single day and average it out over the course of a month. So we should look at it on a daily and a monthly average level.

We also believe that the large TDS sources should be covered by the standard. It should be made clear that existing large sources of TDS will eventually have to comply with the standards in the proposed regulation, as other people have also stated.

We would like the DEP to consider adding discharge standards for additional contaminants that are frequently found in Marcellus Shale gas drilling waters. This includes the bromides, arsenic, benzene, radium and magnesium other people have talked about. Many of these contaminants are toxic to humans and aquatic life, and are difficult for drinking water systems to remove.

One other thing that hasn't been mentioned is in a struggling time for, I think, our economy and also our tax state, this will put a major stress on the water systems that we all rely on to clean up our water supplies. So for the Philadelphia region and Philadelphia Water Department or other water departments who are already struggling to meet sometimes their needing to clean up the water that's

coming through the system.

And then in order to protect both the drinking water sources and aquatic sources, these regulations should be in place as soon as possible. And as other people have stated, we support that DEP stop issuing more drilling permits which increase existing wastewater loads in Pennsylvania streams until the Chapter 95 revisions are in place.

DEP should also stop allowing existing or proposed wastewater plants to discharge TDS at levels above the standards established in these Chapter 95 revisions as is currently occurring. And the effective date should not be extended beyond what is currently proposed. We should keep it at the end of 2000 --- I think it's '10 right now. I think that's right. If not sooner.

And finally, we think that all aspects of the Marcellus wastewater generation needs to be regulated. Currently, there is little oversight over the reuse of the Marcellus wastewater. And so that needs to be considered within the regulations. And we'll submit fuller comments, you know, for the record down the road.

MR. MANFREDI:

Before we call our last testifier, is

there anyone else who wishes ---?

MR. BENNER:

So I don't get to go last.

MR. MANFREDI:

If you wouldn't mind, please come up, sign up and then ---.

MR. BENNER:

Thanks for taking my spot.

OFF RECORD DISCUSSION

MR. BENNER:

Hello, folks. Thanks for all staying here so late. This is the second meeting I've attended. My brother got me to come down to Philly last week. I live in Fleetwood, Pennsylvania, which is Berks County, which, of course, you all heard tonight is throwing sludge on our farm fields. So I have nothing to do with that, but I've seen it happen all the time.

Anyways, I was at the meeting last week and my brother got me fired up. This has to be the most stupid idea I ever heard of in my life, this drilling a mile down, a mile and a half down, for something that is so toxic to begin with we shouldn't even be burning it in our houses, anywhere, close to where we breathe.

How many people would come up here and put their mouth onto the emissions that come out of natural gas when you burn it? Anyone? I wouldn't. And I'll tell you why I wouldn't. Because two years ago my daughter got so deathly sick after six months of running my heat in my house that she ended up in CHOP for a week --- almost ten days with swelling on her brain from carbon monoxide poisoning because I didn't have a detector.

I had a new house. I had no idea. I thought it wasn't supposed to have that stuff in there. Turns out I had a leaky furnace. Natural gas would leak out. It wasn't all being burned properly. It leaked up to the top of the house into her room. And she developed signs and symptoms that I wasn't aware that was slow carbon monoxide poisoning. By the time I got her to the hospital, she had symptoms of MS and --- sorry. It's tough.

She's doing better now. She's a great kid. She has a little bit of eye movement problem in her one eye from the swelling on her brain that got into her optic nerve. But above and beyond all that, I've decided to shut natural gas out of my house. And I hope everyone here realizes that that's the problem we're facing right now.

We've created a demand for something that we don't need. Let's face it. Thanks for backup. I don't usually speak, at least to a bunch people I don't know.

Natural gas is a joke. We don't need this. If the government would release the technology to us that they've hidden for years since probably the '30s or '40s, even before then, that would give everybody free energy at their own location, at their own house where they wanted to live, we wouldn't be relying on someone else to tell us what we need to get from the earth to burn for ourselves to have heat, to have hot water, to have drinking water.

It's a joke. There's technology right now, I was just on the Internet today, that you could put on your house, pay for it within three years by a monthly payment that will actually give you electric in your house. And there's no need to go any other route. We don't need to rely on oil, gas or coal anymore. I hope you're videotaping this because I don't usually talk.

Just get it out of our system because we created a demand for something we don't need. So the law of attraction tells us if we manifest something we want in our lives, like free energy for everybody, we

won't need to rely on these big companies anymore and they won't be able to slip like a Halliburton law through on us, who will come in and destroy our land, not to mention the land in Europe. They've done it too. They've done it to Texas, now Colorado, West Virginia, all these other states.

I just bought land in Ithaca. They're going to try to do it up there. Come on. It's a joke. This is pathetic. You guys should regulate it. Whatever's going on right now, regulate to the max you can and then stop it. And then let's create a demand for something else because then they'll go. If the money isn't here, they will leave. That's what we got to do. And good luck doing that.

MR. MANFREDI:

Thank you, Mr. Benner. And I hope your daughter gets well. Shirley Masuo.

MS. MASUO:

I really have to pee, so I'm going to keep this short. I hope this doesn't sound harsh. My name is Shirley Masuo and I'm cofounder of Pro Pike PA, a group that works for the betterment of Pike County. My address is 196 Coursen Road, Shohola, Pennsylvania, 18458.

Pro Pike PA does not take a stand on gas

drilling, as gas drilling provides both hope and promise for Pike County. But it is hard to understand how the people who are supposed to be making sure the gas industry goes about its business in a responsible way can be letting hydraulic fracturing go forward in Pennsylvania without the proper protective standards in place for drinking water. Is this not what PA DEP does?

Issuing gas drilling permits before protective standards are in place and proper oversight is established is something that would be expected from the gas drilling industry, not PA DEP. The gas industry's job is to make as much money as possible. DEP's job is to make sure they don't cause damage to the environment while they do that. This is not rocket science.

To allow the discharge of wastewater from hydraulic fracturing into streams and rivers without meeting proposed standards until 2011 is not an acceptable position for the Department of Environmental Protection to be taking. Moreover, the proposed regulations do not address some key problems, such as regulating the reuse of flow-back.

Discharge standards need to be applied to reused fluids. That's not a position of environmental

nuttiness. It's just commonsense. We ask that you stop issuing drilling permits until you have sensible regulations in place. Thank you.

MR. MANFREDI:

Thank you. Eric Pavlak.

MR. PAVLAK:

My name is Eric Pavlak from 202 Oakland Avenue, Oaks, Pennsylvania. I'm not going to rehash things that have already been said. I just want to enter into the record an area we kind of neglected, which is while DEP is suffering a 27 percent budget cut, DECNR is suffering 18 percent budget cut. We're not getting paid for this gas. Pennsylvania, out of the 15 top gas-producing states, is the only one that doesn't get a severance tax. It collects no tax money from the extraction of this mineral resource. We're not only getting screwed, we're not getting paid for it. And I just wanted to add that to the record. There are --- this could provide --- gas extraction could provide a wonderful source of financing for DEP, for environmental action, for the general fund in Pennsylvania. And we're not getting our due. We're letting people take this for free. Thank you.

MR. MANFREDI:

Thank you, sir. The next testifier is

Steven Davis.

MR. DANIS:

Danis.

MR. MANFREDI:

Danis. Sorry about that.

MR. DANIS:

Okay. My name's Steven Danis. South Whitehall Township. I hope you all can hear me now. I have a question. We're not supposed to ask questions of DEP in this format. But it was a point that came up.

Starting in the spring of this year, previously soil and water conservation districts, and there is a district in each county, dealt with placements of gas valves and the road that have to go to them. For some odd reason, that oversight was taken away from the county soil and water conservation districts and everything was sent to the state.

I'm working with conservation districts myself, growing up on a farm and owning a farm later, which just along New York State ---. That seems kind of odd because I think the conservation districts have established over time a good record as far as oversight when it comes to moving dirt. So that is one point which I think the Department perhaps should

look into. I would strongly urge them to rethink that decision.

And secondly, I've spent several years now reading on the subject of natural gas. It's my strong opinion the natural gas industry is not going to go away. It is an integral part of our energy structure in this country. Now, a huge percentage and a growing percentage comes from drilling into shale deposits, and it's not going to go away.

Exxon a few days ago announced it's going to pay $41 billion in cash and taking on debt for XTO, which is a major gas-producing company. Exxon does not make many bad investments historically. So it is here to stay.

Now, my contention is it needs to be regulated. Or will it be outlawed? I don't believe that is within the realm of possibility. Thank you.

MR. MANFREDI:

Thank you, Mr. Danis. Cecilia Dougherty.

MS. DOUGHERTY:

Hi. I'm Cecilia Dougherty. I live in Erdenheim, 910 Bent Lane. That's just outside of Philadelphia. I just want to make one point kind of in reference to a point that was made earlier about New York State not allowing any wastewater.

And it sort of came across to me that we were saying well, we don't want theirs. My point is we should do the same thing. We should say we don't want to take any wastewater. Yeah, it's a huge amount of natural gas. We are very much dependent on natural gas. But this is such a pivotal point, a pivotal time in the sense that it is really coming together. It's, you know, our needs versus our rights.

I honestly do not believe that this can be distracted safely --- extracted safely. I really, honestly don't believe it could ever be. So I say moratorium drilling. And let's find a way to do what New York State did and deny, you know, any wastewater in our state as well. Thank you.

MR. MANFREDI:

Is there anyone else who would wish to testify?

OFF RECORD DISCUSSION

MR. MANFREDI:

I just want to thank everyone for sticking around all night and coming. I really appreciate it. I know I appreciate your comments very much. If there are no other witnesses or testifiers present, then on behalf of the Environmental Quality Board, I will hereby adjourn this hearing at 8:20 p.m.

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HEARING CONCLUDED AT 8:20 P.M.

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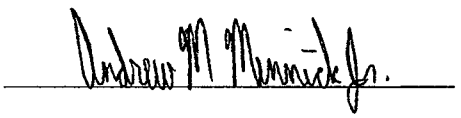
CERTIFICATE

I hereby certify that the foregoing proceedings, hearing held before Member Manfredi, was reported by me on 12/17/2009 and that I Andrew M. Minnick, Jr. read this transcript and that I attest that this transcript is a true and accurate record of the proceeding.



Court Reporter