



September 12, 2024

**TESTIMONY OF
ARTHUR STEWART**

**PRESIDENT, CAMERON ENERGY COMPANY &
SECRETARY, PENNSYLVANIA GRADE CRUDE OIL COALITION (PGCC)**

BEFORE THE

PENNSYLVANIA SENATE MAJORITY POLICY COMMITTEE



TESTIMONY:

I began my business 36 years ago and today we employ 55 men and women who operate 1800 conventional wells in Warren, Forest and McKean Counties. We supply natural gas to 15,000 households, schools, and businesses. We produce oil that is refined into lubricating oil and household products.

Over my career, I have plugged hundreds of oil and gas wells, including many orphan wells. Plugging a modern well is usually simple: gain access via the modern road, remove the "downhole" equipment (rods and tubing); insert a pipe to the bottom; pump cement through the pipe; allow the cement to come up the hole; wait a day to check the integrity of the cement; and if all is well install a monument.

Plugging an ancient orphan well can be much more difficult. Usually there are no roads. Often the downhole equipment is deteriorated and must be "fished" out piece by piece. This requires highly experienced operators and specialty equipment. During the cleaning out process we frequently encounter oil that must be removed before plugging; sometimes that oil is difficult to contain.

All parties agree: there are several hundred thousand orphan wells in PA; typical estimates range from 300,000 to over 700,000. Most of the orphans are shallow oil wells in northwest PA. The DEP hopes to receive north of \$300 million in federal money for well plugging. That sounds like a lot; however, with the first round of federal money the DEP spent \$110,000 per well. At that rate the DEP will plug about 3000 wells, or less than 1% of PA's orphan wells over the life of the entire federal program. We can do much better.

Prior to receiving federal money, the DEP's average cost to plug a shallow oil well was \$17,584. DEP plugged some orphans for as little as \$3,225. My cost to plug an orphan well would average about ten thousand dollars. If we can reduce the cost from \$110,000 we can plug far more than 1% of PA's orphan wells. Here are several suggestions:

First the DEP should aggressively use the grant program created by the legislature under Act 96. The DEP chose not to use the grant program during the first round of federal money. But when DEP eventually uses the grant program, a plugger like me will plug a shallow orphan well at my own cost. If I plug the well in accordance with DEP specifications, DEP will use federal money to reimburse me my actual costs, up to a cap of \$40,000 for shallow wells. Act 96 requires DEP to use at least 20% of the federal money for the grant program. My first suggestion is that DEP direct more than the 20% to the Act 96 plugging grants.

Second, in the first round of plugging the DEP put the well bids out in large packages. Bidders were required to submit bonds in excess of 200% of the bid amount. Small companies with great expertise, but small cash flows, were unable to afford the bid bonds. As a result, the plugging work is flowing to large companies at the expense of PA's small businesses. The DEP can easily fix this by issuing small packages.

Third, recent DEP training seminars warned that under the grant program, DEP will be expecting strict Erosion and Sedimentation compliance. This will mean great expense in the form of graveling roads that will be used one time; or installing expensive filter sock for a very short project. Past DEP administrations have exercised a very different and much more flexible approach. Along those lines I want to introduce to you the concept that my company tested successfully with a former DEP

administration, namely, the use of tracked vehicles. My company has built a fleet of tracked plugging equipment that can access remote wells without the need to build roads. I have included pictures in my appendix. DEP should return to this flexible approach.

Similarly, recent DEP training seminars warned that under the grant program DEP will expect testing and hauling of oil-soaked soil around the orphan well. Excavating and hauling soil is both expensive and disruptive to the native soil. Former DEP administrations have plugged thousands of wells without requiring expensive soil hauling. In fact, in PA the EPA successfully employed bioremediation at plugging sites. This process leaves the native soil in place and stimulates natural occurring microbes to clean the soil. Members of my industry have successfully used this process with past DEP administrations in several volunteer projects, and in my appendix I have included a link to an EPA report that details the success of bioremediation in PA. The current DEP administration could drastically reduce plugging costs simply by implementing the successful path previously followed by EPA and earlier DEP administrations.

Finally, I recommend that DEP plug more wells by applying the federal money to actually plugging wells, instead of spending on tangents such as finding more orphan wells. To put it nicely, DEP well records are in shambles. Over the last 10 years my company has found over 400 orphan wells which we have duly submitted to DEP. Even after my company has made repeated contact with DEP, very few of the submitted wells have shown up in DEP's records as orphan wells. Instead, through bureaucratic mismanagement, many of the wells have shown up in DEP's database as wells for which my company is responsible. This wrongfully harms the reputation of me and my industry.

My company is hardly alone. Last year DEP records purported to show that several conventional operators had failed to produce over 20,000 wells that were, in fact, producing! The DEP data was totally false, but the Sierra Club used DEP's false data to testify that the conventional industry was abandoning wells at an "epidemic" pace.

The truth is that 99% of PA's orphan wells were drilled in ancient times, before well permitting was required. The wells were abandoned during WWI and WWII scrap drives, or earlier. DEP does not need to spend money finding more orphan wells. DEP already knows of nearly 30,000 wells which DEP used to justify its application to the feds. Even if the DEP implements my cost-saving suggestions, the federal money will plug only a small portion of those 30,000 wells.

Today is not the day to waste money cataloguing more wells. Today is the day to spend the federal money wisely and efficiently, plugging the many wells that DEP used to justify its federal application. I represent the PA Grade Crude Oil Coalition and we are proud to tell you that PGCC's many members stand ready to help our communities and our State, by using our know-how to plug orphan wells safely and inexpensively.

ORPHAN WELLS vs. MODERN CONVENTIONAL WELLS



**Orphan well located on stream bank
(such location not allowed in modern times)**



Orphan well with tree growing in the ancient pumping unit



Modern pumping unit located at Cameron Energy headquarters parcel



Modern pumping units in Allegheny National Forest

EXCERPTS FROM DEP POWER POINTS

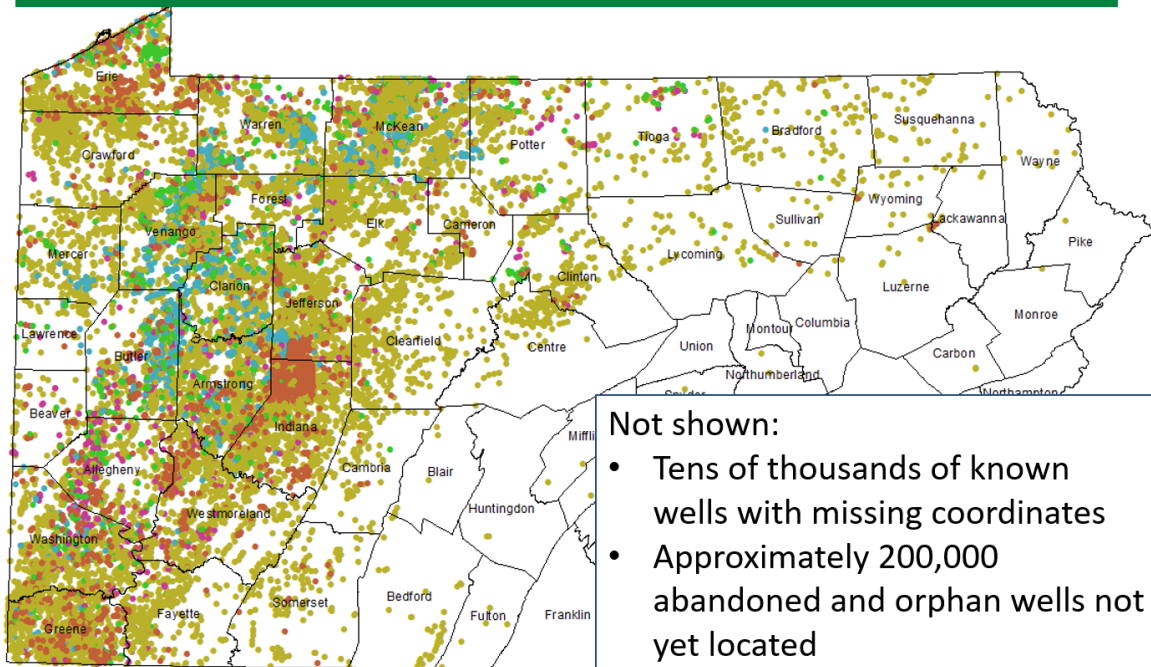


DEP Legacy Well Emissions Study

June 21, 2016

Citizens Advisory Council Meeting
Presentation

Legacy Oil and Gas Wells



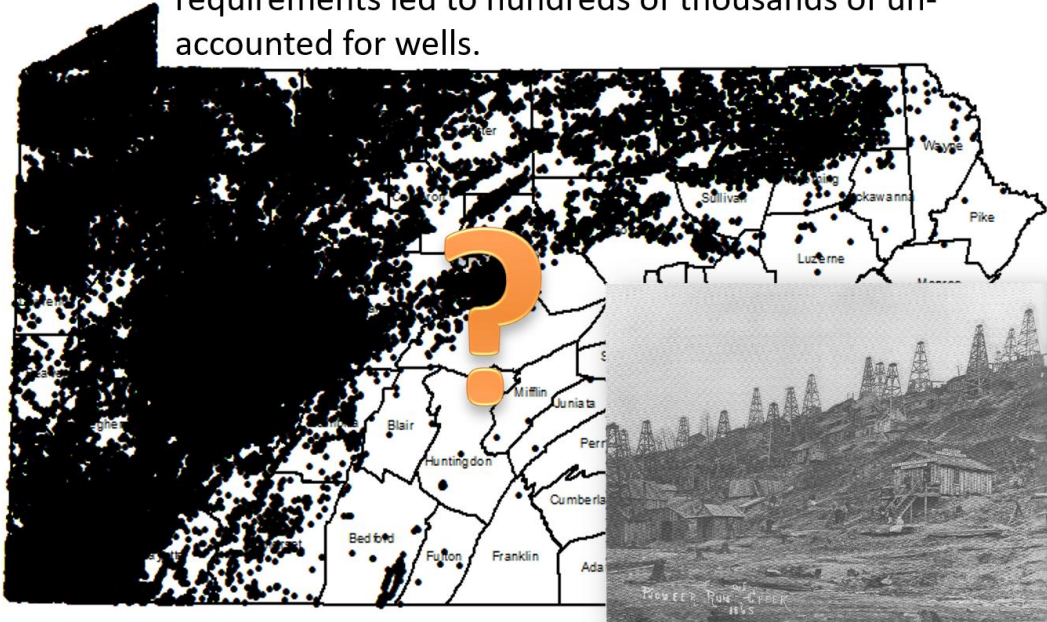
Not shown:

- Tens of thousands of known wells with missing coordinates
- Approximately 200,000 abandoned and orphan wells not yet located

- Abandoned (2,451)
- DEP Orphan List (5,946)
- Plugged OG Well (23,760)
- DEP Abandoned List (2,291)
- DEP Plugged (3,274)

Legacy Oil and Gas Wells

Nearly 100 yrs of development prior to permitting requirements led to hundreds of thousands of unaccounted for wells.



Abandoned and Orphan Wells

Abandoned Well: Act 13 of 2012, Section 3203:

- (1) A well:
 - (i) that has not been used to produce, extract or inject any gas, petroleum or other liquid within the preceding 12 months;
 - (ii) for which equipment necessary for production, extraction or injection has been removed; or
 - (iii) considered dry and not equipped for production within 60 days after drilling, redrilling or deepening.
- (2) The term does not include wells granted inactive status.

Orphan Well (Act 13, Sections 3203 and 3220(a)):

- "A well abandoned prior to April 18, 1985, that has not been affected or operated by the present owner or operator and from which the present owner, operator or lessee has received no economic benefit other than as a landowner or recipient of a royalty interest from the well."
- "If the department determines that a prior owner or operator received economic benefit, other than economic benefit derived only as a landowner or from a royalty interest, after April 18, 1979, from an orphan well or an unregistered well, the owner or operator shall be responsible for plugging the well."



Regulatory History of Well Plugging

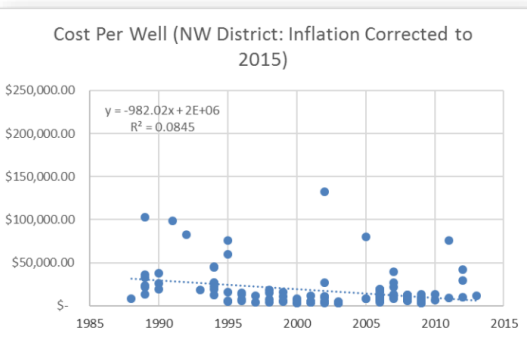
- **1859** – First well drilled, “Drake well”, Titusville, PA
- **1878** – Wells first required to be plugged with wood and sediment
- **1881** – Plugging requirements updated: Fill well with sand or rock sediment and wooden plugs above third producing sand
- **1921** – Plugging requirements updated
 - Fill with sand or rock sediment and each producing strata plugged with wood plug
 - Requires venting of wells through coal layers
- **1952** – API standards for cement and well plugging published
- **1956** – Well permitting begins; modern plugging requirements
- **1984** – Modern environmentally-minded plugging requirements
- **1989** – First well plugged in DEP plugging program



DEP Well Plugging Program: Cost Modeling

What Influences Plugging Costs?

- To a certain extent...location, location, location!
- DEP’s Northwest District (n=117 contracts)



NW District Summary Statistics (1988-2013)	
Mean	\$17,584.25
Standard Error	\$2,043.24
Median	\$9,941.18
Mode	\$3,225.00
Standard Deviation	\$22,101.01
Sample Variance	\$488,454,824.30
Kurtosis	9.543667051
Skewness	2.956478522
Range	\$129,197.38
Minimum	\$3,225.00
Maximum	\$132,422.38
Sum	\$2,057,357.13
Count (Contracts)	117
Largest(1)	\$132,422.38
Smallest(1)	\$3,225.00
Confidence Level(95.0%)	\$4,046.89
95% UCL	\$21,631.14

TRACKED SERVICE RIG BUILT BY CAMERON ENERGY COMPANY



BIOREMEDIATION

EPA PRESENTATION:

[Voodoo vs. Science: The Practical Application of Bioremediation Techniques as a Removal Response Option at Oil Spill Sites in the Northwestern Pennsylvania Oil Patch | US EPA ARCHIVE DOCUMENT](#)

EPA ONE PAGE GUIDE:

"Bioremediation" of Small Scale Oil-Contaminated Soil Sites

The United States Environmental Protection Agency (EPA) recommends that natural attenuation be evaluated by as a viable option when assembling an appropriate removal action plan for a site with petroleum-contaminated soils. Natural attenuation processes include biodegradation, adsorption, dispersion, and volatilization. Numerous studies have indicated that the natural, in-situ bio-degradation process, often called intrinsic bioremediation, is a primary mechanism for the attenuation of petroleum hydrocarbons. Bio-degradation is the only natural attenuation mechanism that has the potential to destroy the contaminants in-situ with nontoxic inorganic end products.

"Bioremediation" implemented as a removal response action at certain Oil Pollution Act ("OPA") Sites in EPA Region III utilizes simple yet effective techniques and locally available equipment and materials to accelerate the process of intrinsic bioremediation, aggressively incorporating the natural attenuation processes of biodegradation, adsorption, dispersion and volatilization with solidification, aeration, organic loading, and composting of oil-contaminated soil and debris.

The following activities are recommended to implement "bioremediation" of oil-contaminated soil at oil spill sites that affect a relatively small surface area:

- [1] Utilizing hand-tools (shovels, rakes) excavate the visibly oil-contaminated soil to solidify and aerate.
- [2] Utilizing hand-tools, spread the solidified, aerated oil-contaminated soil to a depth of one to two inches deep.
- [3] Utilizing hand-tools incorporate organic matter (composted leaf litter, manure) into the oil-contaminated soil. The incorporation of organic matter should almost double the volume of the oil contaminated soil. For example if the depth of the solidified/aerated oil-contaminated soil was one inch deep, then the depth should be approximately two inches deep after incorporation of organic matter.
- [4] Apply a sufficient quantity of nutrient (10-10-10 fertilizer) to simply dust or coat the top of the oil-contaminated soil. Utilizing hand-tools, the nutrient can also be incorporated into the oil-contaminated soil.
- [5] Apply seed to the top of the oil-contaminated soil.

If the seed sprouts, exhibits growth but then dies, repeat the procedures describe above, using the dead and dying vegetation as the organic matter.

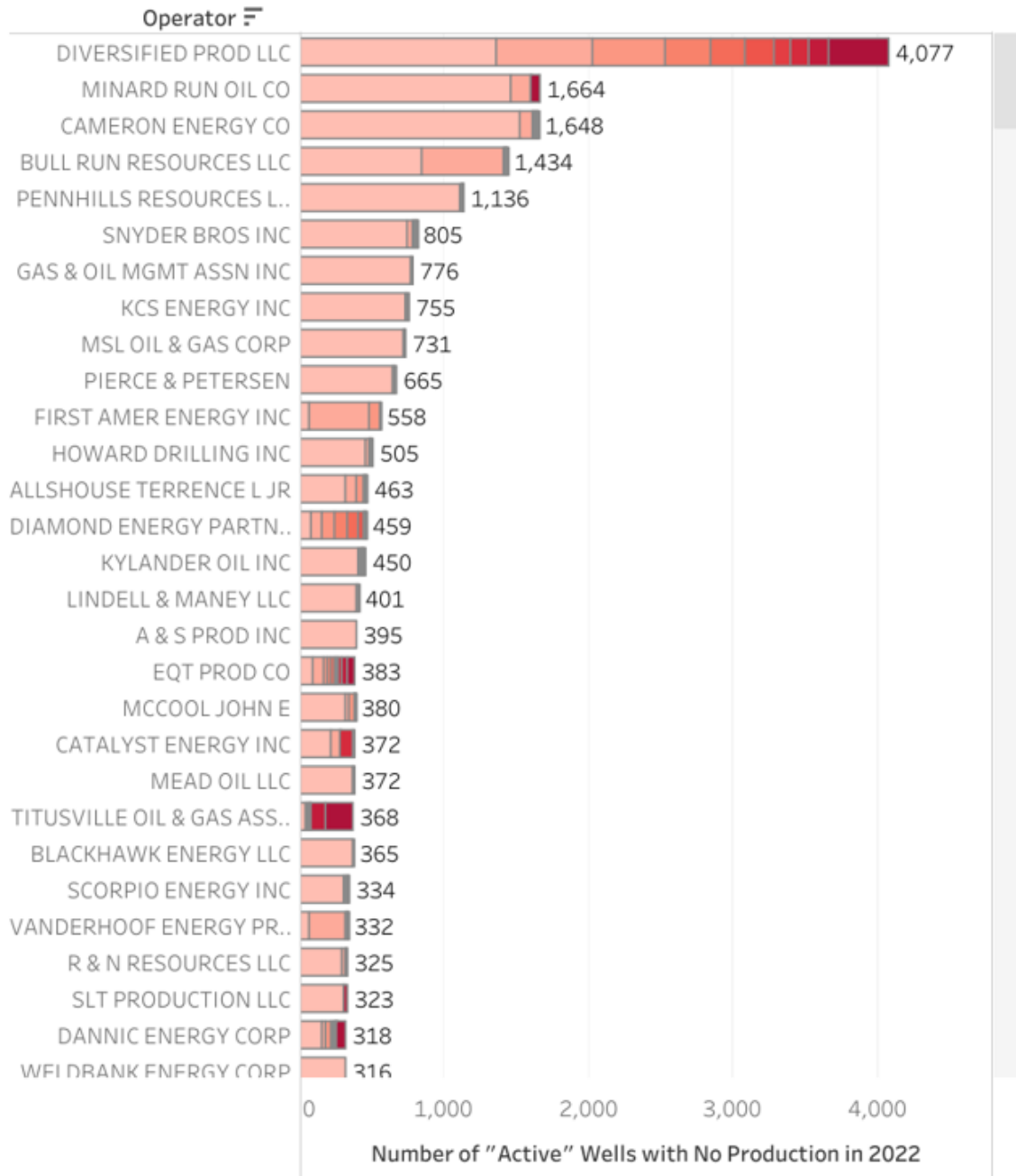
Once the seed sprouts, exhibits growth and the vegetation persists, the process can be deemed complete. Typical Total Petroleum Hydrocarbon concentrations in the previously oil-contaminated soil may be expected to be at approximately 10,000 mg/kg at the time when a vegetative cover can successfully be reestablished using this practical "bioremediation" technique.

Should you have any questions concerning this "bioremediation" technique, please feel free to contact Vincent Zenone, OSC at (215) 814-3267.

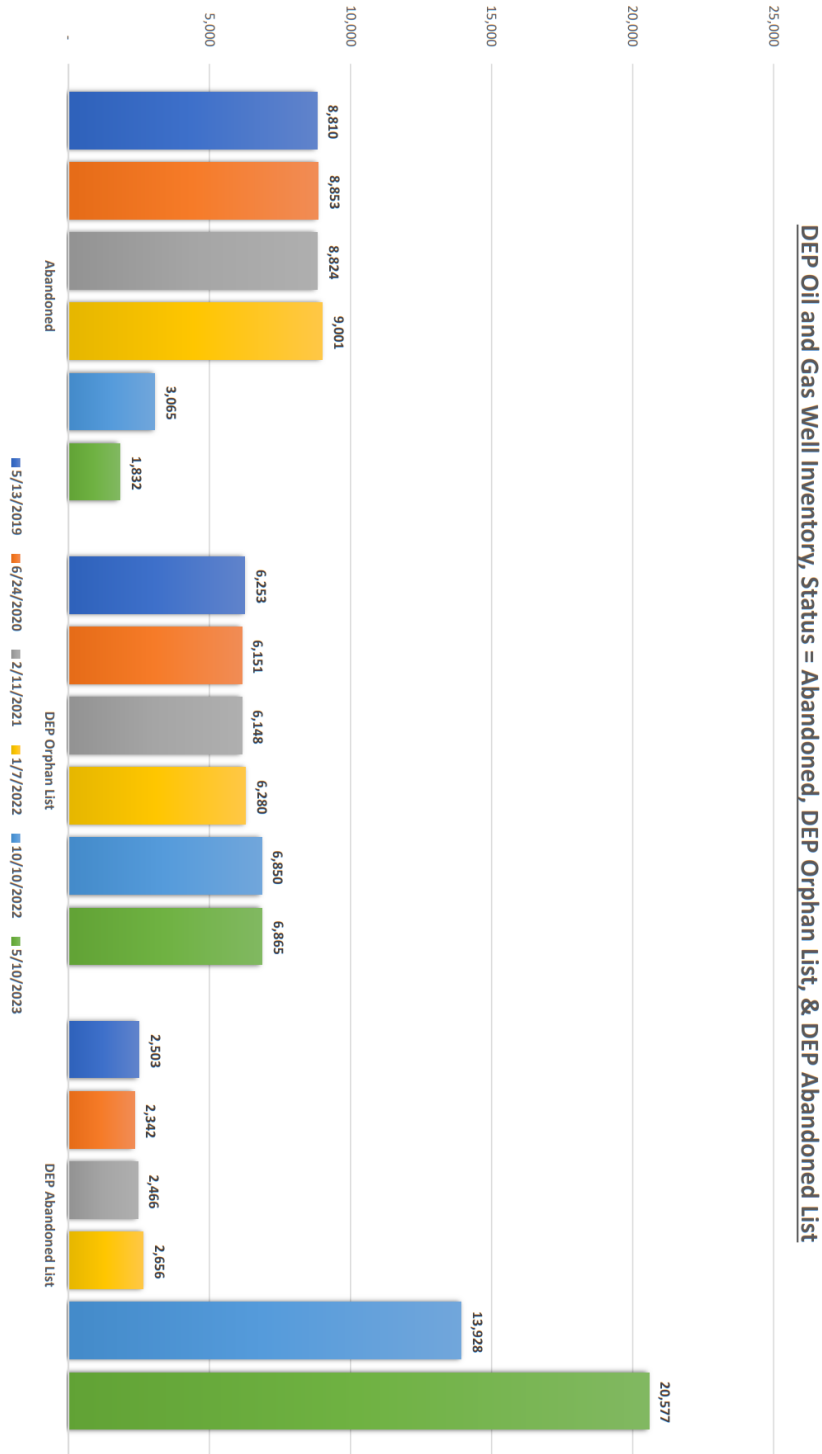
GRAPH PREPARED BY THE SIERRA CLUB

Years of No Production

(All) ▼



GRAPH PREPARED BY PGCC



Graph showing problems with DEP's well definitions

Arthur Stewart's Testimony to PA House ERE Committee
PA Orphan and Abandoned Wells
3-25-24

I'm departing from my original remarks because today's testimony reveals common ground. I want to highlight where we witnesses agree.

First, it's clear today all of us are talking about 2 categories of unplugged wells. The **first category** are ancient-unplugged wells abandoned 50, 100 or more years ago, and for which any responsible party is long dead. DEP refers to these wells as being "drilled and abandoned prior to the 1984 Oil and Gas Act." Melissa from Earthworks refers to the wells as orphaned; Kelsey from Sierra Club calls them Legacy wells. I will call them **ancient-unregistered** wells.

The **second category** are registered wells...meaning wells that were NOT abandoned when the 1984 Oil and Gas Act went into effect, and that had to be registered at that time. I'll refer to this second category as **registered** wells, because registered wells are the responsibility of today's conventional oil and gas industry. Much of today's testimony expresses a fear that PA's conventional oil and gas industry will abandon these registered wells.

Back to the first category of ancient-unregistered wells. Those who have testified today put the number of the ancient-unregistered wells at several hundred thousand. Our conventional industry agrees with that number.

Here are several facts about ancient-unregistered wells I believe we agree on:

- 1) THE ANCIENT-UNREGISTERED WELLS ARE NOT THE RESPONSIBILITY OF TODAY'S CONVENTIONAL OPERATORS;
- 2) THE ANCIENT-UNREGISTERED WELLS CANNOT BE BONDED BECAUSE THE DRILLERS ARE LONG DEAD; AND
- 3) A BONDING INCREASE WILL NOT HAVE ANY IMPACT ON THESE ANCIENT-UNREGISTERED WELLS."

Most important, from today's testimony, we can agree that **the lion's share of PA's unplugged well problem is composed of the ancient-unregistered wells, not abandoned registered wells.** Whether you accept the high or low estimate of unplugged-unregistered wells, it's clear that the unplugged-unregistered wells outnumber abandoned registered wells, by more than 10 to 1.

From this I trust we can all publicly acknowledge that **today's conventional operators are not the main cause of PA's unplugged well problem.** In fact, I trust we can agree that, at most, today's conventional operators are associated with a small slice of PA's unplugged well problem.

When we focus on that slice, today's testimony reveals another place where we agree, namely, the rate at which registered wells are being abandoned. When I testified here last year, DEP told you that over the last 5 years DEP added 3000 conventional wells to its abandoned list. Based on that, the Sierra Club, and others concluded the conventional industry is abandoning wells at the rate of 500 wells per year. They called it an epidemic.

I said the rate was not 500 wells per year. Chairman Vitali asked me if I was denying the epidemic rate. I said I was denying it, and that the DEP data did not support the contention of 500 wells per year. Specifically, the **DEP DID NOT KNOW WHEN THOSE THREE THOUSAND WELLS WERE ABANDONED**. Based on incomplete DEP data those wells may have been abandoned 20, 30 or 40 years ago.

I am pleased to tell you that in today's materials, DEP has confirmed what I told you last year. The DEP data **was** incomplete and did not support the alleged rate of 500 abandoned wells per year. Instead, the materials the DEP provided you today show that the rate of abandonment of registered wells is far less than 500 per year.

This confirms a problem the conventional industry has pointed to for a long time. The DEP data is often wrong or incomplete.

I greatly respect Chairman Vitali's integrity. Last April, when I said that the DEP data was wrong, Chairman Vitali scheduled a follow up meeting in June. Chairman Vitali invited legislators, DEP, conventional oil and gas producers, and the Sierra Club to resolve the dispute. To support its claim of an epidemic, the Sierra Club displayed this graph of conventional oil and gas producers who allegedly "abandoned" over 20,000 registered wells in 2022 by not producing them.

This Sierra Club graph contains false data. The other producers and I who were in the room pointed to our companies and told the attendees that, in fact, we produced every one of the wells. For example, my company is number 3 on the Sierra Club list—my company produced every one of the 1648 wells listed for my company.

The Sierra Club trouble-shot its false chart and discovered that **the DEP data the Sierra Club had relied upon, was wrong**; DEP's database failed to show the 2022 production reported by the conventional producers. The Sierra Club sent us a note of apology; and in the words of the Sierra Club, the DEP data problem was "weird."

We conventional producers have long known that the DEP database of unplugged wells is "weird", filled with errors and oversights. For example, my company has discovered and submitted over 400 orphan wells to the DEP. Instead of DEP putting the 400 wells on the orphan list, the DEP put some of the wells on my company's database, tarnishing my company's reputation by making it appear to all of you that my company is guilty of abandoning wells. That accusation is false; that DEP data is false.

Last May, at the PA Grade Crude Development Advisory Council meeting (CDAC), conventional oil and gas producers representing three conventional trade groups challenged the DEP to correct its flawed database. We submitted this list of eight questions to DEP to clarify and correct the oversights and errors that populate the DEP's unplugged well database.

The DEP attempted to answer the 8 questions at that meeting, but the DEP representative couldn't. He promised to provide answers in the future, but didn't. I presented the same questions at the June meeting hosted by Chairman Vitali. Again, the DEP representatives promised to answer the questions, but didn't. At the next CDAC meeting in October the DEP promised to provide the answers, didn't.

For 10 months the DEP has broken its promise to answer the eight questions.

When DEP does answer the 8 questions we will see that the vast majority of today's conventional industry is made up of responsible operators who plug wells and operate wells exactly as the law expects. There are not many oil and gas scofflaws—certainly not the outrageous numbers the corrupted DEP database suggests. But scofflaws who abandon wells or otherwise cut corners are bad for the environment and bad for the conventional oil and gas industry. **This committee, the conventional industry, the Sierra Club, and all citizens of the Commonwealth, need an accurate database that truly identifies both the source of the real problem as well as the scofflaws that add to that problem. Instead, what we have are 10 months of broken promises and a corrupted database that unfairly maligns a huge segment of the conventional oil and gas industry.**

One place we are not in agreement is testimony from Ohio River Valley that PA's conventional wells produce such small amounts of oil and gas that the wells will be abandoned. Low producing wells, also known as stripper wells, account for nearly 10% of US production, or about 1 million barrels of oil per day. If our stripper wells were a country we would be the 17th largest producing country in the world, out of 100.

Ohio River Valley's testimony also makes the incorrect assumption that our industry does not plug wells. In the last 10 years my company has plugged 230 wells, 100 of them being orphan wells. In other words, I have plugged more wells than I have drilled, and my company is not alone.

I hope it is obvious to all in this room that if bonding amounts are increased to crushing amounts our operations would also be crushed. The plugging our industry does would stop and there would be a true epidemic of abandoned wells. Increased bonding is a problem, not a solution.

Before closing I want to address the cost of plugging orphan wells. Under the federal program the DEP is in the process of plugging 200 wells at an average cost of \$100,000 each. Prior to the federal program the DEP's average cost per well in my region was less than \$18,000. My company has plugged over 200 wells in the past ten years and I can testify,

from first-hand experience, that the average cost of plugging is, and should be, far less than \$100,000 per well.

One cause of the high cost is the large size of the bid packages assembled by DEP. Another cause is the high cost of the bonds required to bid on the projects. These causes discouraged small businesses and sole proprietors from bidding.

One way to reduce cost is to implement the grant program created by legislature under Act 96. Under the grant program volunteers who plug wells, in accordance with DEP standards, are entitled to reimbursement up to \$40,000 per plugged well. This innovative legislation does away with bidding packages and bidding bonds. When the DEP implements the grant program you will see many orphan wells plugged for less than \$40,000. The DEP failed to implement the grant program in the first tranche of federal funding, and I urge the DEP to implement the grant program sooner than later so that at least some of Pennsylvania's orphan wells are plugged at costs far less than the outrageous sum of \$100,000 each.

The three trade groups representing the conventional industry, PIOGA, PIPP, and PGCC, have all reviewed my testimony; they endorse this testimony and join with me in the expression of hope that this Committee will refrain from laying blame for Pennsylvania's unplugged well problem at the feet of today's conventional oil and gas industry.