

Locating Abandoned and Orphan Wells

Bureau of Oil and Gas Planning and Program Management
09/03/2025



Oil and Gas Development in PA



Stock photo, reproduced from the Drake Well
Museum collection



An 1870s photograph of the east side of Triumph
Hill, near Tidioute, PA by Frank Robbins of Oil City



What are abandoned and orphan wells?

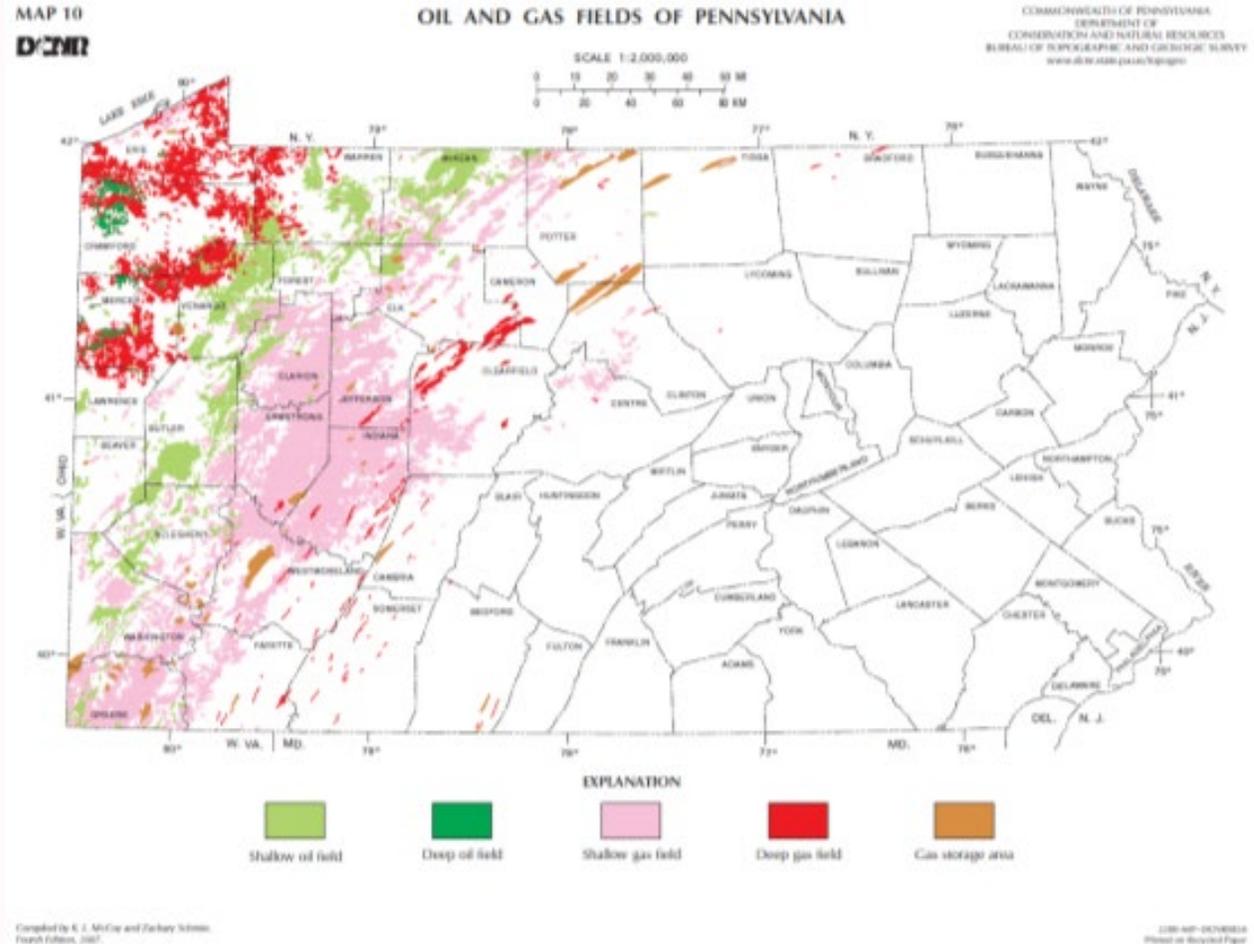
- Generally, the term “**legacy well**” refers to abandoned wells that cannot be traced to a party responsible for plugging them – Nationally, these wells are often considered “orphaned or abandoned wells” which are synonymous with the federal definition of an “orphaned well”
- **Orphan Well** (~7,000 documented) – Abandoned prior to **April 18, 1985** (key legislative date)
- **Abandoned Well** (~20,000 documented) – Not used in preceding 12 months or not equipped for production, extraction or injection
- Abandoned wells may move into the category of **DEP Orphan Wells** as the responsible party may not be found or the entity may have become insolvent



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Abandoned and Orphaned Wells in PA

Conventional Oil and Gas Fields



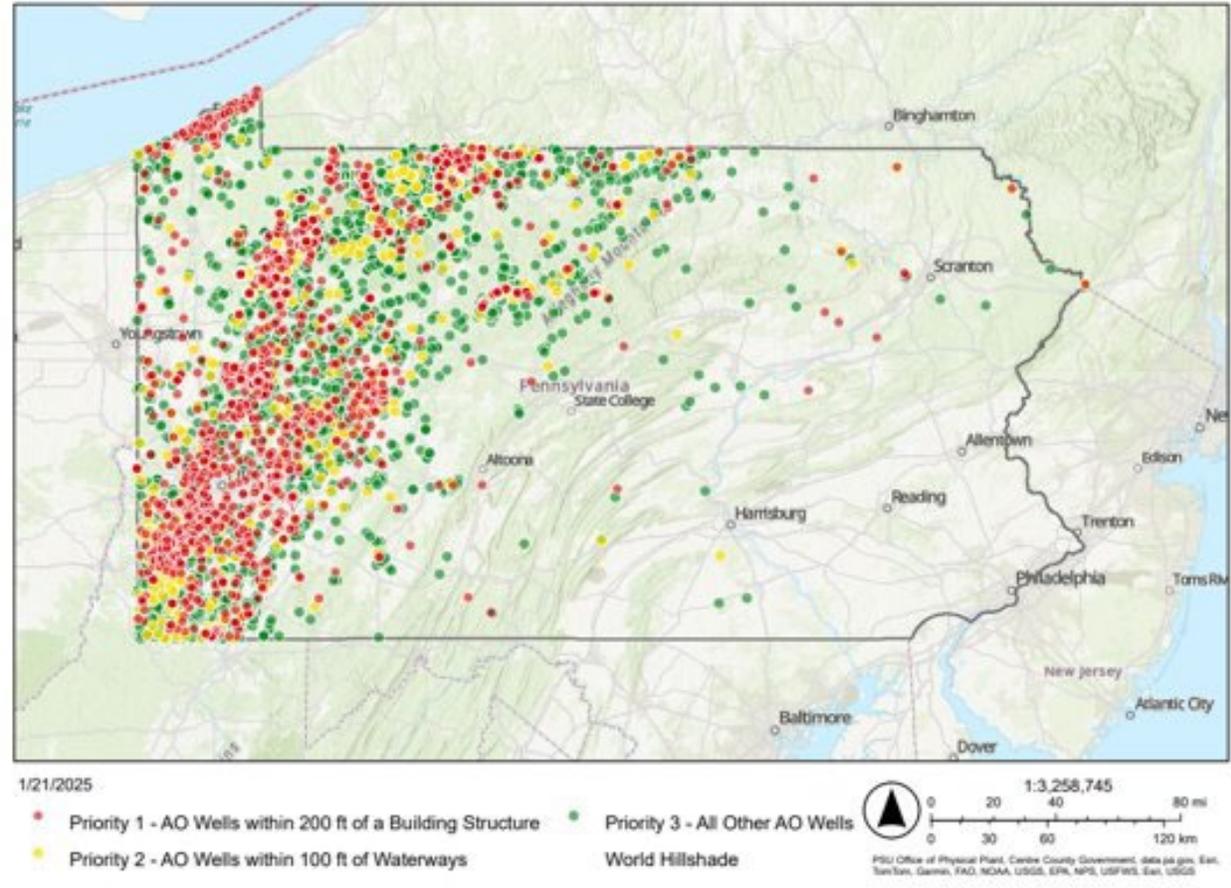


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Abandoned and Orphaned Wells in PA

Documented Conventional
Wells in PA

Abandoned and Orphaned Well Prioritization



How did we get here?

- Regulatory History:
 - 1859 to 1878 – no regulations
 - 1878 to 1984 – some regulations, poor plugging standards
 - Oil & Gas Act of 1955
 - updated plugging requirements, first well drilling permits required
 - 1984 to 1987 – better drilling regulation and plugging standards
 - PA Act 223 (**Oil & Gas Act of 1984**)
 - **Modern environmental plugging requirements established**
 - 1989 – First well plugged under DEP plugging program
 - 1992 – Orphan Well Program established



cannonball plug



pine plug



What is the scope of the problem?

- “Legacy wells” are a significant source of pollution
 - Methane, H₂S, and other harmful gases
 - Acid-laden groundwater (mine influenced water)
 - Oil, brine, and other formation fluids
 - Legacy constituents
- Studies estimate **more than 300,000 undocumented orphan wells** may exist in PA



What is DEP doing about it?

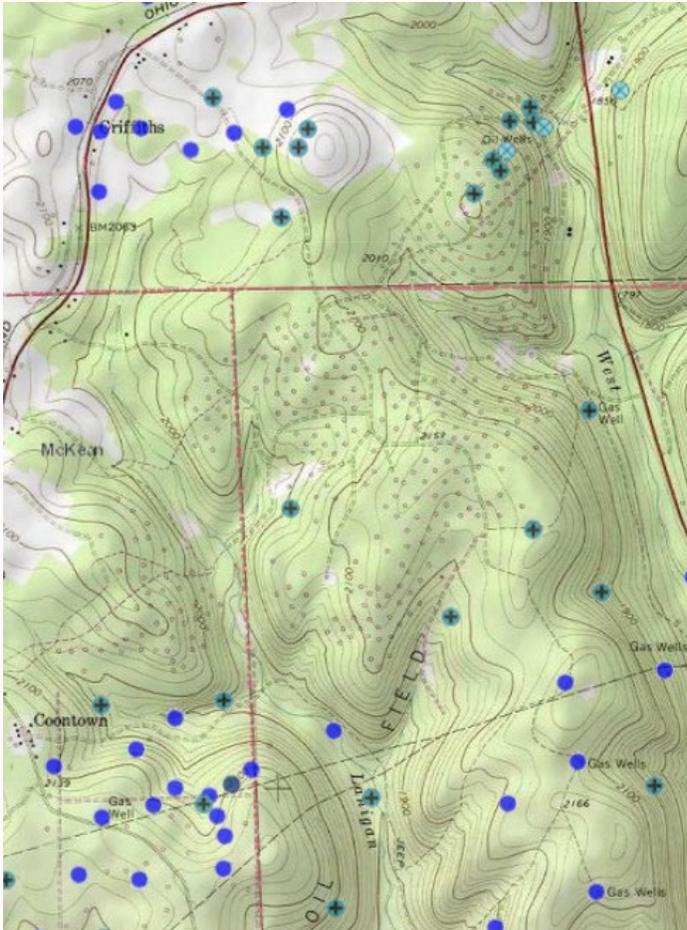


- More than \$400M in federal grants under the Infrastructure Investment and Jobs Act (IIJA)
 - Before federal funding: 286 wells plugged in prior ten years (2012-2022)
 - Since federal funding: over 320 wells plugged and counting (since 2023)
- Allows for
 - Well plugging
 - Environmental remediation
 - Undocumented well location



What is DEP doing about it?

<https://gis.dep.pa.gov/PaOilAndGasMapping/>



- Undocumented Well Location Efforts:
 - Working with research institutions and other partners:
 - Harrisburg University, Indiana University of Pennsylvania, and the Pennsylvania State University
 - Working with the Environment Defense Fund (EDF)
 - Actively working with industry to refine locational accuracy of known wells and find undocumented wells
 - Request For Proposals (RFP) solicitation – IJA funded contracts for well location services
- Inspecting inventory of known AO wells, as well as those found by undocumented well location efforts



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How can you help?

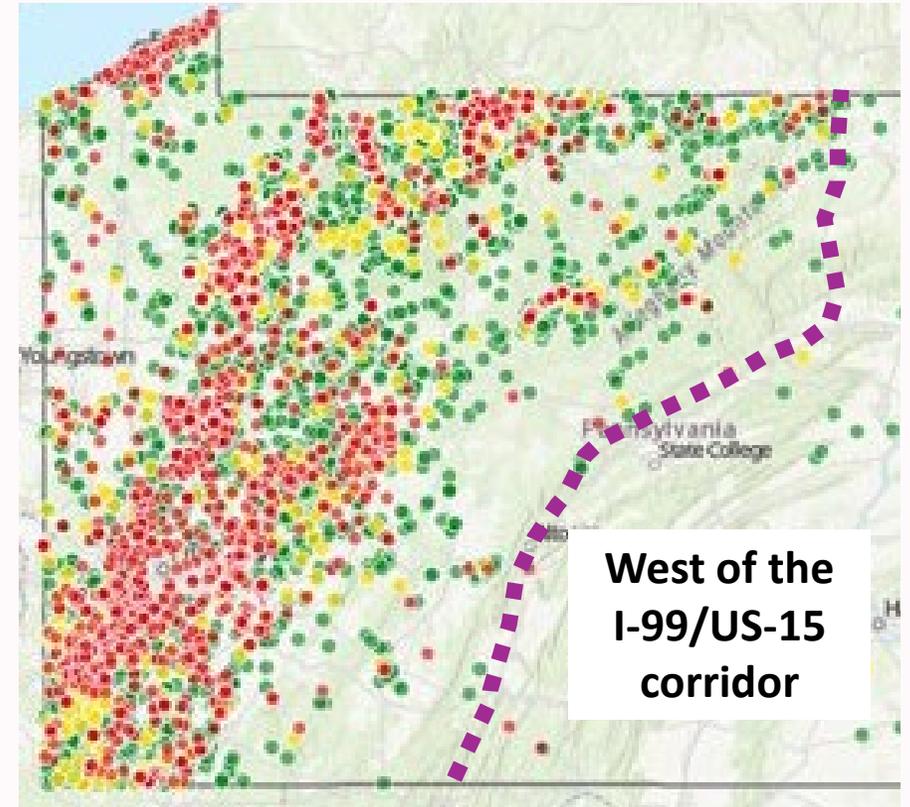
- Locating potentially undocumented wells





How can you help?

- Locating potentially undocumented wells
 - Finding wells on foot (photo with coordinates)
 - Magnetometry surveys (share GIS data)
- Reporting Wells to DEP
 - Share our [Abandoned Well Reporting link](#) or this QR Code



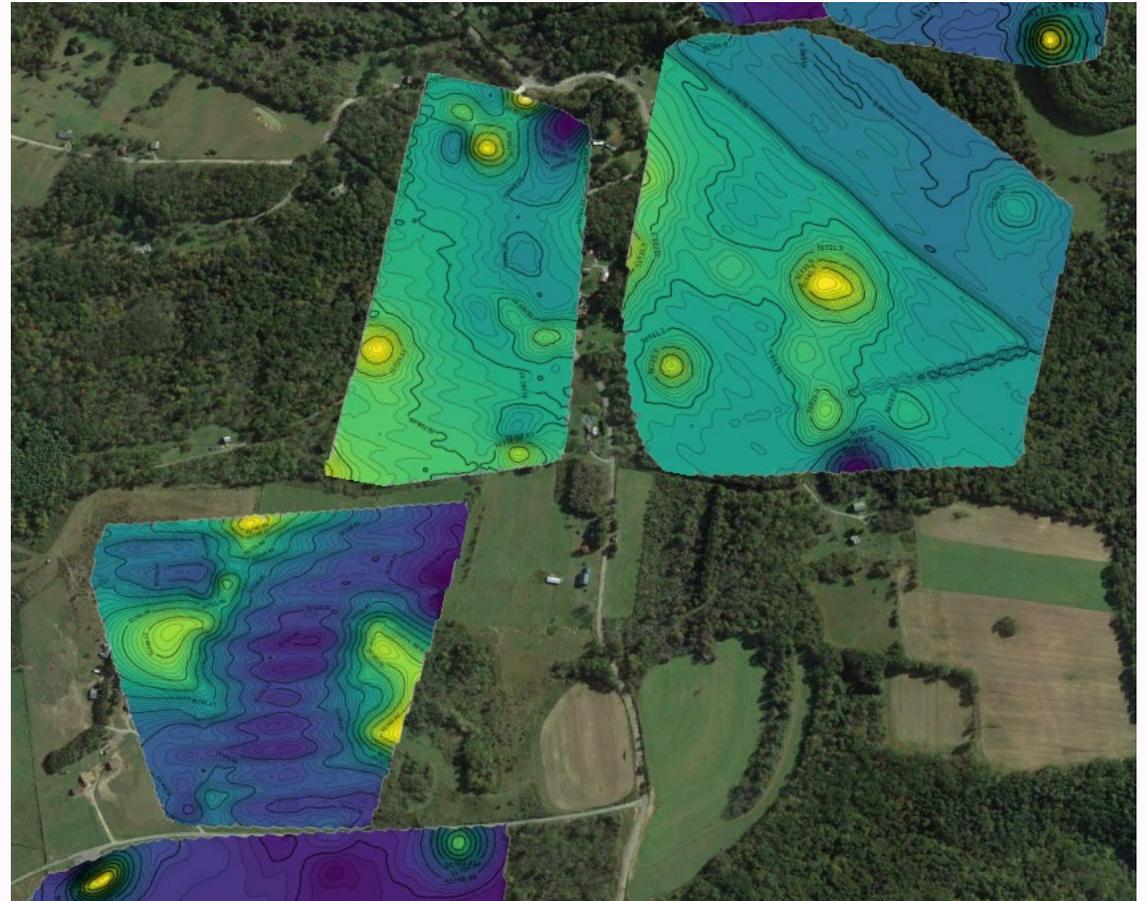
General depiction of historical conventional oil and gas fairway



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Magnetic imagery courtesy of EDF



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The Department of Environmental Protection's mission is to protect Pennsylvania's air, land and water resources and to provide for the health and safety of its residents and visitors, consistent with the rights and duties established under the Environmental Rights Amendment (Article 1, Section 27 of the Pennsylvania Constitution).