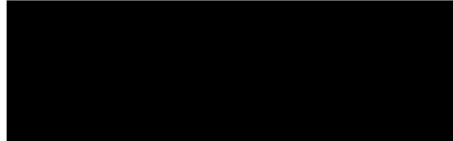




Pennsylvania
Department of
Environmental Protection

December 16, 2024

CERTIFIED MAIL NO. 9589 0710 5270 2523 9041 14



Re: Water Supply Request for Investigation
DEP Identifier: 373559
Positive Determination, No Known Operator -- 58 Pa. C.S § 3218
Mead Township, Warren County

Dear 

The Department has completed its investigation of your water supply listed in Exhibit A ("Water Supply"). Based on the sample results and other information obtained to date, the Department has determined that gas found in your Water Supply headspace is from historic or new, abandoned or active, oil and gas wells, or another natural communication from the production formations to the water well. Despite efforts from all the local oil and gas operators and Department personnel, a suspect well, lease, or other source was not identified. This information is summarized below.

CASE INFORMATION:

Date of Complaint	Nature of Complaint (odor, taste, quantity, use, color)	Sample Results Above Statewide Standards (highest levels seen in monitoring shown)
July 13, 2023	Complainant reports gas in their private water supply	• Methane/ethane/propane (at their highest on 7/25/2023) 5.49/5.78/3.77 mg/l respectively; none ever reaching above the DEP action level of 7 mg/l; however, headspace gas was randomly, regularly measured at 100% methane • Iron 4.61 mg/l (0.3 mg/l smcl) • Manganese 2.55 mg/l (0.5mg/l smcl) • Turbidity 9.13 ntu (1 ntu filtered surface water only) • Arsenic 0.0128 mg/l (0.01 mg/l mcl)

mcl=maximum contaminant level, smcl=secondary maximum contaminant level, ntu nephelometric turbidity unit

INVESTIGATION SUMMARY:

On July 13, 2023, you called in a complaint to the Department reporting that there was gas in your water well. This was evident after you had Clearwater Drilling come to look at the water because of turbidity that was noticed. At that time, the driller realized that the well was affected with methane, as there were visible fumes coming from the wellhead. Department staff performed a site visit to check for gas around your home and take gas readings from the wellhead. It was noted that the water had a slight chemical smell.

Realizing this was a gas migration, an inspection protocol ensued involving Department Oil and Gas Inspectors to inspect all wells within 2,500 feet of the Water Supply. Altogether, there were six oil and gas operators who cooperated with the Department to investigate issues involving gas migration.

Leases surrounding your Water Supply were individually shut in and/or vented for timeframes, and subsequent monitoring of the gas in the headspace of the water well was performed. This was an attempt to isolate the lease or well which may be the source of the gas. There were also inspections performed on transmission pipelines, plugged wells, abandoned wells, and a gas processing plant in the area. Field reconnaissance and discussions with area residents yielded no information toward locating the possible gas source.

ANALYSES RESULTS:

There were no predrilling analyses to compare with the current results. Water samples were obtained at random intervals twelve times during the yearlong investigation. Analyses in the first sample on July 17, 2023 appeared to have the highest levels of iron, manganese, turbidity, and arsenic. Iron, manganese, and arsenic were above drinking water standards at 4.61 mg/l, 2.55 mg/l, and 0.0128 mg/l respectively. In the initial volatile organic analyses sample taken on July 25, 2023 analyses confirmed that there was a solvent type compound found at very low concentrations. Analyses showed 10.5 ug/l of 2-butanone, also known as methyl ethyl ketone. In addition, there were the following volatile organic compounds found in the sample: acetone, benzene, and t-butyl alcohol. For the compounds that have a maximum contaminant level, none of the sample results exceeded those established levels. Final water sample results from an ultraviolet infrared sample of the water on June 20, 2024, indicated, "no petroleum products in this sample".

It should also be noted that as the complaint investigation proceeded, the headspace gas occurrence frequency and amount decreased, and the levels of dissolved gases in the water decreased from near 6 mg/l methane, to non-detect, so there was a definite gas mitigation accomplished through the operators' and Department personnel's efforts performed on the adjacent leases.

The Department has determined that gas found in your water supply headspace is from historic or new, abandoned or active, oil and gas wells, or another natural communication from the production formations to the water well. Despite efforts from all of the local oil and gas operators and Department personnel, a suspect well or lease was not identified. This determination is based on the similarities in the isotopic signatures of the headspace gas to the area production gas.

Thank you for your patience in this matter. Please contact Christine Miner at 824.795.5273 if you have any questions about the Department's determination, or if your water changes in any way.

Sincerely,

Scott M. Dudzic

Northwest District Oil and Gas Manager
District Oil and Gas Operations

Enclosures:

Exhibit A
Department Analyses Table and Department Analysis
Isotopic Analyses
Headspace Readings July 2023 through April 2024 from the Water Supply
Fact Sheet-Interpreting Water Supply Results
Methane Fact Sheet

cc: Ayers/Bruce (via email)
Lencer/Adams/Frederick/Hartle (via email)
Strobel/McDonough (via email)
Lichtinger/Miner (via email)

EXHIBIT A

Water Supply Location:

