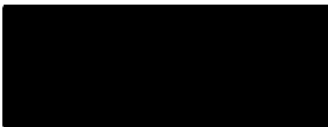




January 6, 2021



**CERTIFIED MAIL NO.** [REDACTED]

Re: Water Supply Request for Investigation ID: 349737  
58 Pa.C.S. § 3218 Determination  
Mchoopany Township, Wyoming County

Dear [REDACTED]

The Department of Environmental Protection ("Department") has been investigating the possible degradation of your water supply located at the above referenced address ("Water Supply"), in response to a complaint that recent oil and gas activities may have affected your Water Supply. The Department's investigation, prompted by information you provided, has determined that your Water Supply was adversely affected by oil and gas activities, including but not limited to the drilling, alteration, or operation of an oil or gas well. The information upon which this determination is based is summarized below.

**Summary of Investigation**

On May 14, 2020, the Department received information from Chesapeake Appalachia, LLC, ("Chesapeake") identifying the detection of combustible gas in a capped jar sample collected during the evaluation of your Water Supply. The sampling was being conducted during a gas migration investigation involving nearby water supplies. Chesapeake initiated an investigation and collected samples from the Water Supply. On May 20, 2020, the Department also collected a water sample from your Water Supply and submitted it to the Department's laboratory in Harrisburg for analysis. The sample results were previously provided to you, but are summarized for your convenience in the enclosed table, along with the sample results provided by Chesapeake. The attached results table shows an increase in the concentrations of methane, ethane, propane, iron, manganese, and turbidity compared to pre-drill conditions. Those increases coincide with the drilling of nearby gas wells.

The attached sample results table shows that the following analytes exceeded Department standards during one or more of the sampling events.

Parameters	Unit	Statewide Standards or Recommended Levels	Your Sample Results that Are Above Statewide Standards/Levels
Manganese	mg/L	0.05	0.0619-0.168
Methane	mg/L	7 (Action Level)	20.9-32.30
Iron	mg/L	0.3	0.397-2.07
Turbidity	NTU	1	1.96-25.8

Manganese was not detected in your pre-drill water sample above the detection limit of 0.0150 milligrams per liter ("mg/L"). Manganese was detected at the concentrations noted in the table above during the investigation. These values exceed the secondary maximum contaminant level ("MCL") of 0.05 mg/L for manganese. Secondary MCLs reflect the aesthetics of the water (i.e. taste, smell, etc.).

Iron was detected in your pre-drill water samples at 1.31 mg/L. During the investigation, iron was detected in the range of concentrations shown in the table above. While the iron concentration in all the samples collected exceed the secondary MCL of 0.3 mg/L for iron, the highest value detected exceeds both the pre-drill concentration and the secondary MCL.

Turbidity was detected in your pre-drill water sample at 14.4 nephelometric turbidity units ("NTU"). During the investigation, turbidity was detected in the range noted in the table above. While the turbidity in all the samples collected exceed the primary MCL of 1 NTU for turbidity, the highest value detected exceeds both the pre-drill concentration and the primary MCL. Primary MCLs are intended to reflect potential dangers to human health, although it should be noted that the primary turbidity MCL is only applicable to regulated surface water sources or groundwater sources under the direct influence of surface water.

Dissolved methane was not detected in your pre-drill water sample above the detection limit of 0.005 mg/L. The laboratory analytical results from your Water Supply indicated elevated dissolved methane concentrations ranging from 20.9 mg/L to 32.30 mg/L. Elevated levels of methane were also detected in the headspace of your Water Supply well.

Samples of the methane from the Water Supply were collected and sent to a specialized laboratory for isotopic and compositional analysis. These analyses allowed for a more detailed characterization of the gas present in the Water Supply. The isotope and compositional analyses indicate that the stray gas in your Water Supply appears to be associated with oil and gas activities.

Dissolved ethane and propane were not detected in your pre-drill sample results. The laboratory analytical results collected during the investigation indicated dissolved ethane concentrations ranging from 1.31 mg/L to 2.21 mg/L and dissolved propane concentrations ranging from 0.0141 mg/L to 0.0498 mg/L.

January 6, 2021

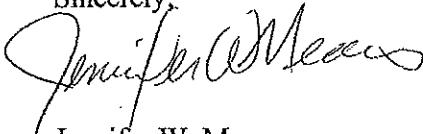
Methane is the predominant component of natural gas. Federal water standard limitations have not been established for methane gas. The level of concern begins above 28 mg/L methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional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

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

It is the Department's understanding that your water well has been equipped with a working vent. This will help alleviate the possibility of concentrating these gases in areas where ignition would pose a threat to life or property. Please note that it is not possible to eliminate the hazards of having natural gas in your Water Supply by simply venting your well.

The Department is continuing to work to permanently resolve this issue. Should you have any questions about the Department's determination regarding the Water Supply, feel free to contact Eric Rooney, P.G. at 570-346-5543 or [erooney@pa.gov](mailto:erooney@pa.gov).

Sincerely,



Jennifer W. Means  
Environmental Program Manager  
Eastern Oil and Gas District

Enclosures:  
Laboratory Analytical Results Table

cc:  
Michael O'Donnell (email)  
Briana Cunningham (email)  
Eric Rooney, P.G. (email)  
Complaint File # 349737