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October 16, 2017

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation 327922
58 Pa. C.S. § 3218 Determination
Harford Township, Susquehanna County

Dear [REDACTED]

The Department is investigating the possible degradation of your water supply located at the above referenced address ("Water Supply") in response to a complaint received on June 30, 2017, regarding discoloration and odor. Based on the sample results and other information obtained to date, the Department has determined that the 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

You complained of malodorous and gray/brown discoloration in your water. When the Department responded to your complaint on June 30, 2017, the water from the Water Supply was strongly effervescent. As a result, the Department was able to substantiate your concerns, and returned to collect samples on July 3 and July 5, 2017, due to the weekend and holiday. Samples were collected as shown in the enclosed table, and submitted to the Department's laboratory in Harrisburg for analysis. The analytical results are enclosed as well. The attached sample results show an increase in the concentration of methane, turbidity and iron from pre-drill conditions.

Results of samples from the Water Supply showed levels of turbidity above pre-drill levels. Specifically, the Department's July 5, 2017 sample results revealed turbidity was detected at 2.26 nephelometric turbidity units (NTU) which exceeds the primary maximum contaminant level (MCL) of 1NTU. Sampling conducted on August 1, 2017 also revealed a turbidity exceedance at 9.51 NTU and an iron exceedance at 1.237 mg/L, which exceeds the secondary MCL for iron of 0.3 mg/L. Primary MCLs are intended to reflect potential dangers to human health, while secondary MCLs reflect the aesthetics of the water (i.e. taste, smell, etc). It should be noted, however, that for regulatory purposes, the primary turbidity MCL applies only to surface water or to groundwater under direct influence of surface water.

Please note that the sample results showed dissolved methane concentrations ranging from 19.8 to 31.4 mg/L in your water supply. Water samples were collected to analyze the carbon isotope ratios of this methane gas, in an effort to identify the source. The carbon isotope ratios of this gas were compared to several samples of methane gas collected from the nearby gas wells and were found to have a similar composition to some of those samples.

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 recommendation that all water wells should be 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 completely eliminate the hazards of having natural gas in your water supply by simply venting your well.

On August 1, 2017, the Department also collected samples from your Water Supply after the treatment system was installed. In the post-treatment system samples, iron was below the secondary MCL. However, methane and turbidity were not yet below Department action levels and MCLs, although the concentration of both were reduced by the treatment system.

The Department is working to resolve this issue. Please contact Andrea Mullen, P.G. at 570.974.2607 or andmullen@pa.gov if you have any questions about the Department's determination regarding the Water Supply.

Sincerely,



Jennifer Means
Environmental Program Manager
Eastern Oil and Gas District