



August 24, 2016

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation DEP Identifier 308544
Impact to Water Supply; Operator Not Determined - 58 Pa. C.S §3218
Kingsley Township, Forest County

Dear [REDACTED]

The Pennsylvania Department of Environmental Protection (“DEP”) has completed its investigation of your water supply (“Water Supply”). Based on the sample results and other information obtained to date, DEP has determined that the Water Supply was affected by oil and gas activities including, but not limited to, the drilling, alteration, or operation of an oil, gas, or injection well(s), however, a specific source was not identified during the investigation. This information is summarized below.

CASE INFORMATION

Date of Complaint	Nature of Complaint (odor, taste, quantity, use, color)	Sample Results Above Statewide Standards or Recommended Levels
October 23, 2014	Odor in the water	Iron – 0.864 mg/l Manganese – 0.290 mg/l Benzene – 6.47 ug/l

DEP staff reviewed oil and gas documents and conducted field surveys to identify oil and gas wells within 2,500 feet of the Water Supply. The most current documents identify 37 wells, consisting of a mix of active, abandoned, and plugged wells.

Two (2) water samples were taken from the Water Supply and analyzed for dissolved methane, ethane, and propane. The methane/ethane ratios for each of the samples were less than 10, which suggests that the origin of the gas is thermogenic, which means it could be from an oil and/or gas well.

Methane gas was detected in the Water Supply in pre-drill samples from 2012 and 2013. DEP sample results continue to detect methane gas in the Water Supply. The methane level never met or exceeded the action level that the DEP has set at 7 mg/l for methane gas in the water. It is the DEP’s recommendation that all water wells should be equipped with a working vent to alleviate any potential build-up of natural gas in the headspace of a water well as methane is the

August 24, 2016

predominant component of natural gas. Because your water well is currently buried, the DEP recommends that a vent be placed on the well.

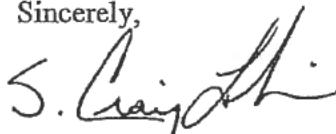
Drinking water standard limitations have not been established for methane gas and there are no known associated health risks. The true level of concern begins above 28 mg/l methane, which is what we call the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional methane. The level of methane gas in the Water Supply at the time of the last sampling was 4.7 mg/l.

Benzene was detected within the volatile organic analysis results. These levels have decreased to below the standards that have been set for drinking water aquifers. You may want to consider carbon filter treatment because it has been proven to be highly effective in removing trace amounts of benzene in water, and likely assist with removal of the odor that is still present in your Water Supply.

Please do note that your water quality does not meet (i.e., is worse than) health and/or aesthetic statewide standards. You may consider exploring remedial actions regarding the levels of iron and manganese, as identified above, and also set forth in the attached sampling results.

Please contact Joe Lichtinger at 814.332.6869 if you have any questions about the DEP's determination regarding the Water Supply

Sincerely,



S. Craig Lobins, P.G.
District Oil and Gas Manager
Northwest District Oil and Gas Operations

Enclosures: Fact Sheet associated to interpreting your water analyses
Lab results

cc: Michael Braymer (elec. w/encl.)
Katherine Knickelbein (elec. w/encl.)
File (through Joseph Lichtinger, P.G.) Forest County Complaints