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pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DISTRICT OIL AND GAS OPERATIONS

May 6, 2014

CERTIFIED MAIL NO. [REDACTED]

Re: 58 Pa.C.S § 3218 Determination
Complaint ID 293929
Warren Township, Bradford County

Dear [REDACTED]

The Department has investigated the possible degradation of your water supply well located at the above referenced address in response to a 12/13/2012 complaint that gas well drilling activities may have affected your water supply well.

On 12/13/2012, 1/3/2013, 2/25/2013, and 5/15/2013 the Department collected samples from your home water supply. The samples were submitted to the Department's laboratory in Harrisburg for analysis and those sample results were previously provided to you.

The sample results showed iron was detected in your water at 0.60 milligrams per liter (mg/L) on 12/13/2012 and at 2.15 mg/L on 5/15/2013. Those levels exceed the Secondary Maximum Contaminant Level (SMCL) of 0.3 mg/L. Total dissolved solids (TDS) were detected in your water at 510 mg/L on 12/13/2012, which exceeds the SMCL of 500 mg/L. Iron and TDS were both detected in your water during the pre-drill sampling at concentrations of 0.24 mg/L and 457 mg/L, respectively. However, those pre-drill concentrations did not exceed the SMCLs. Additionally, the sample results showed methane was present in your water supply at 23.3 mg/L on 12/13/2012, 21.2 mg/L on 1/3/2013, 18.8 mg/L on 2/25/2013 and 9.53 mg/L on 5/15/2013. Methane was present during the pre-drill sampling at a concentration of 5.3 mg/L. Ethane was detected in your water supply on 5/15/2013 at a concentration of 0.189 mg/L. Ethane was not present during the pre-drill sampling.

Because drilling activities occurred at a gas well within two thousand five hundred feet of your water supply, and the pollution occurred and was reported within one year after completion of the well, under Section 3218 of the Oil and Gas Act (58 Pa C.S. §3218), the gas well operator is presumed to be responsible for the degradation of your water supply. The Department's investigation indicates that gas well drilling may have temporarily impacted your water supply. The increase of pre-existing methane in your water supply may have been the result of drilling at the [REDACTED] gas well pad. However, the Department's 5/15/2013 laboratory analytical results demonstrate that the methane concentration has decreased to a concentration consistent with the pre-drill methane levels. Additionally, the Department evaluated isotopic data from your water supply, isotopic data from gas samples collected from the [REDACTED] gas well, and isotopic data

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from other nearby residential water wells where pre-drill methane was detected. The evaluation of this data indicates the methane in your water supply is consistent with early thermogenic/microbial gas while samples from the [REDACTED] gas well indicate that gas to be consistent with more mature thermogenic gas. Isotopic results from the other nearby water supplies containing pre-drill methane indicate that the origin of the gas in those water wells is consistent with the origin of the gas found in your water supply.

The drilling at the [REDACTED] pad may have also resulted in the temporary increase in iron and TDS observed during the 12/13/2012 sampling event. However, the Department's subsequent water sampling results collected on 1/13/2013 and 2/25/2013 demonstrated that the elevated iron and TDS in the water returned to concentrations at or below the applicable SMCL, consistent with the pre-drill sample results for those parameters. The elevations in iron and turbidity during the 5/15/2013 sampling event may potentially be due to the fact that the water well was not being utilized at the time of sampling and had not been utilized for a number of months. Surface water infiltration into the well may also have been a cause for the elevated iron and turbidity during this sampling event. The Department has investigated a number of complaints regarding your water supply prior to any nearby oil and gas activity (2005 and 2008). Those previous investigations, as well as the presence of the existing water softener and ultra-violet light disinfection unit on your water supply, are indications of pre-existing water quality problems with your water supply.

Additional water quality monitoring is warranted to: 1) determine if the concentrations of dissolved methane, dissolved ethane, iron, TDS and turbidity are stable; 2) document long term trends; and 3) determine if there are any on-going impacts that would require additional measures to restore or replace your water supply. However, because your attorney apparently refuses to allow additional sampling at your water supply (via an e-mail from [REDACTED] to [REDACTED]), the Department intends no further action at this time. Please inform me if the Department would be allowed to obtain additional samples. It is our understanding that you have moved out of the residence and therefore, there is no immediate need for a temporary water supply as had been previously provided by Talisman.

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.

5/6/2014

Should you have any questions concerning this matter, please feel free to contact Eric Rooney,
P.G. at 570-346-5543.

Sincerely,



Jennifer W. Means
Environmental Program Manager
Oil and Gas Management

cc:

[REDACTED]

Jennifer Means
Marc Cooley
Mike O'Donnell
Gene Rickard
Eric Rooney, P.G.
Complaint File