



September 19, 2024

CERTIFIED MAIL NO. [REDACTED]

Subject Address: [REDACTED]

Re: Water Supply Request for Investigation ID: 360951
58 Pa. C.S. § 3218 Determination
Lenox Township, Susquehanna County

Dear [REDACTED]

The Department of Environmental Protection (“Department”) has been investigating the possible degradation of your water supply located at the above-referenced Subject Address (“Water Supply”) from oil and gas activities. The Department 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.

Please note that without any treatment, water quality sampling indicates that on occasion your water quality does not meet (i.e., is worse than) the following health and/or aesthetic statewide standards. Note that Primary Maximum Contaminant Levels (“MCLs”) are intended to reflect potential dangers to human health, while Secondary Maximum Contaminant Levels (“SMCLs”) reflect the aesthetics of the water (i.e., taste, smell, etc.). None of the parameters in the Water Supply were above a MCL; however, certain samples were above some SMCLs, as set forth in the table below.

Parameters	Unit	Statewide Standards or Recommended Levels	Your <u>Highest</u> Sample Results that Were Detected Above Statewide Standards/Levels
Aluminum	mg/L	0.2	0.46
Iron	mg/L	0.3	17.46
Manganese	mg/L	0.05	0.50
Methane	mg/L	7 (DEP Action Level)	23

Summary of Investigation

On December 8, 2021, the Department was notified that methane was detected in your Water Supply during sampling being conducted as part of a nearby gas migration investigation. Subsequently, water quality samples were collected from the Water Supply on several occasions by the Department and private consultants. The samples were submitted to the Department's laboratory in Harrisburg or to an accredited third-party laboratory for analysis. The analytical reports for the samples collected by the Department were previously provided to you, but are summarized for your convenience in the enclosed table along with sample results provided by Coterra Energy, Inc.

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.

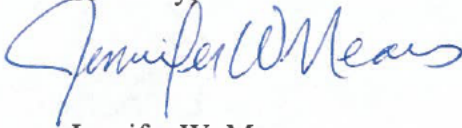
Methane is the predominant component of natural gas. Federal water standard limitations have not been established for methane gas. The level of concern begins above 28 mg/L methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional 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, it notifies 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.

The Department is continuing to work to permanently resolve this issue. Should you have any questions regarding the investigation, please contact Eric Rooney, P.G. at 570.346.5543.

Sincerely,

A handwritten signature in blue ink that reads "Jennifer W. Means". The signature is written in a cursive style with a large initial "J".

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

Enclosures:
Laboratory Analytical Results Table

c: Michael O'Donnell
Eric Rooney, P.G.
Briana Cunningham
Complaint File # 360951

CID# 360951	12/8/2021	12/15/2021	12/15/2021	8/1/2022	4/6/2023	6/1/2023	6/1/2023	8/25/2023	8/25/2023
	Coterra	DEP	Coterra	Coterra	Coterra	Coterra	Coterra	Coterra	Coterra
Results in mg/L unless otherwise noted.	raw	raw	raw	raw	raw	raw	raw	raw	treated
Methane	4.3	6.77	7.8	23	14	11	1.1	13	1.6
Ethane	0.028	0.0534	0.05	0.230	0.100	0.068	0.012	0.063	<0.0050
Propane	<0.0050	<0.0142	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Alkalinity	~	93.2	89	92	91	~	~	110	100
Aluminum	~	0.281	0.46	0.053	<0.030	~	~	<0.030	<0.030
Arsenic	~	0.004490	0.0044	<0.0020	<0.0020	~	~	<0.0020	<0.0020
Barium	~	0.153	0.14	0.12	0.12	~	~	<0.0020	0.12
Bromide	~	<0.2	<0.50	<0.75	<0.75	~	~	<0.75	<0.75
Calcium	~	53.750	49	52	49	~	~	47	49
Hardness	~	158	170	170	150	~	~	140	140
Iron	~	17.460	16	4.2	0.20	~	~	0.10	<0.050
Lithium	~	<0.0250	<0.050	<0.050	<0.050	~	~	<0.050	<0.050
Magnesium	~	5.83	5.6	5.0	5.1	~	~	4.7	4.8
Manganese	~	0.500	0.48	0.040	0.034	~	~	0.053	0.010
pH (units)	~	7.3	7.2	7.2	~	~	~	~	~
Potassium	~	1.45	1.4	1.2	1.3	~	~	1.2	1.2
Selenium	~	<0.00400	<0.0010	<0.0010	<0.0010	~	~	<0.0010	<0.0010
Sodium	~	20.29	19	19	15	~	~	17	17
SPC (µs/cm)	~	399.00	390	390	~	~	~	~	~
Strontium	~	0.388	0.36	0.37	0.38	~	~	0.39	0.38
Total Chloride	~	55.80	58	62	46	~	~	55	63
TDS	~	220	210	210	180	~	~	40	55
Total Sulfate	~	11.96	13	12	11	~	~	10	11
TSS	~	42	64	9.2	3.4	~	~	<3.0	<3.0
Turbidity (NTU)	~	154.50	100	38	2.2	~	~	3.6	<1.0
Zinc	~	<0.0300	0.022	<0.010	0.015	~	~	0.011	0.015

Highlighting indicates an exceeded standard or level ~ Not analyzed * Denotes Primary MCL < Indicates analyte was not detected above its detection limit.

** 7 mg/L represents the Department's official action level for dissolved methane in groundwater

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CID# 360951 Results in mg/L unless otherwise noted.	11/16/2023		11/16/2023		2/26/2024		MCL/Standard
	Coterra raw	Coterra treated	Coterra raw	Coterra treated	Coterra raw	Coterra treated	
Methane	4.4	0.240	7.1				**7
Ethane	0.031	<0.0050	0.022				No Standard
Propane	<0.0050	<0.0050	<0.0050				No Standard
Alkalinity	95	95	99				No Standard
Aluminum	0.031	<0.030	<0.030				0.2
Arsenic	<0.0020	<0.0020	<0.0020				*0.010
Barium	0.12	0.10	0.12				*2
Bromide	<0.75	<0.75	<0.75				No Standard
Calcium	47	48	47				No Standard
Hardness	140	140	140				No Standard
Iron	0.15	<0.050	0.18				0.3
Lithium	<0.050	<0.050	<0.050				No Standard
Magnesium	5.3	5.1	5.0				No Standard
Manganese	0.10	0.0038	0.20				No Standard
pH (units)	~	~	7.5				0.05
Potassium	1.2	1.1	1.1				6.5-8.5
Selenium	<0.0010	<0.0010	<0.0010				No Standard
Sodium	17	16	16				*0.05
SPC (µS/cm)	~	~	~				No Standard
Strontium	0.35	0.34	0.34				No Standard
Total Chloride	48	47	50				No Standard
TDS	200	190	200				250
Total Sulfate	10	10	10				500
TSS	<3.8	<3.8	<3.0				250
Turbidity (NTU)	1.1	<1.0	2.5				No Standard
Zinc	0.012	0.012	<0.010				No Standard

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