



May 24, 2024

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation #356411
25 Pa. Code § 78a.51(c) Determination
Dimock Township, Susquehanna County

Dear [REDACTED]

The Department of Environmental Protection (“Department”) has completed its investigation of your water supply located at the above-referenced address (“Water Supply”) in response to a complaint received on April 30, 2021, regarding turbid water. Based on the sample results and other information obtained to date, the Department has determined that the Water Supply was temporarily affected by oil and gas related activities but has returned to pre-investigation conditions.

Summary of Investigation

The Department received a complaint on April 30, 2021 that your water became turbid in relation to pipeline construction occurring upgradient of your property. On May 3, 2021, the Department conducted a site visit and collected samples from the Water Supply. No turbidity was observed while the Department purged the Water Supply prior to collecting samples. However, the Department inspected the erosion and sediment (E&S) control measures in place along the boundaries of the Williams Companies, Inc. (Williams) Bridgeline Pipeline (“Pipeline”) construction that was approximately 200 yards upgradient of your property, and it revealed several E&S control deficiencies that had the potential to affect your hand-dug Water Supply. As a result of the E&S control deficiencies, the Department was able to substantiate your concerns about turbidity.

The samples collected from the Water Supply on May 3, 2021 were analyzed by the Department’s laboratory in Harrisburg. Those samples and a summary of the sample results were provided to you in a letter on May 24, 2021. Additional samples were collected from the Water Supply by the Department on June 2, 2021 and October 23, 2023. A summary table of the water quality exceedances from the Department sample results collected from the Water Supply on the above-referenced dates is provided below. A summary table of pre-drill and investigative water quality sample results is also provided for your convenience with this letter along with a document that will assist you with interpreting the sample results.

Parameters	Unit	Statewide Standards or Recommended Levels	Your Highest Sample Results in Department Samples that were Detected Above Statewide Standards/Levels
Aluminum	mg/L	0.2	2.630
Iron	mg/L	0.3	2.399
Manganese	mg/L	0.05	0.063
Total Coliform	-	<1 MPN/100mL	>200.5/100mL

The laboratory results from the May 3, 2021 sampling event showed aluminum, iron, and turbidity concentrations above pre-complaint concentrations. The E&S control deficiencies observed around the Pipeline construction likely caused an increase in stormwater runoff to flow downgradient towards your property. Based upon the soil type that your hand-dug Water Supply was constructed in, this excess stormwater rapidly infiltrated into the aquifer that feeds your Water Supply, creating turbid conditions that temporarily degraded your water quality. Following notification of the E&S deficiencies on May 3, 2021, Williams immediately bolstered their E&S control measures. As you reported in a follow-up interview on May 5, 2021, the water ran clear despite a significant rainfall event the previous night.

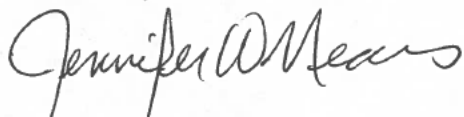
On June 2, 2021, the Department conducted a follow-up sampling event and found the Water Supply to be visibly turbid. Additionally, laboratory analysis revealed aluminum, iron, and manganese concentrations exceeding their respective groundwater standards. Prior to the June 2, 2021 sampling event, Williams plumbed a water buffalo into your residence and the pump responsible for pumping water from the hand-dug well was turned off. The turbid water found on June 2, 2021 resulted from a lack of well usage during that period when the pump was turned off. By October 23, 2023, the Department's third sampling event date, regular usage of the Water Supply began again, the water appeared clear, and the sample results indicated that the water quality returned to pre-investigation conditions.

The Department compared pre-complaint sample results to sample results collected during this investigation, and it found that lead was periodically detected as early as the 2012 predrill sample. Lead's ability to dissolve in water is largely dependent on pH, alkalinity, and hardness. Generally, water that is acidic (pH < 7 S.U.), low in alkalinity, and soft, much like your water, can corrode lead from metal plumbing. Given that the hand-dug well was reportedly constructed in the 1970s, plumbing is the likely source of the detectable lead in the Water Supply.

While the Department determined that the water quality of the Water Supply has since returned to pre-investigation conditions, please do note that hand-dug wells are inherently vulnerable to rapid infiltration events and sanitary issues, such as the bacterial contamination documented in your Water Supply during both predrill and investigative sampling. Three additional documents by the Penn State Extension are enclosed to provide information on lead in drinking water, coliform bacteria in drinking water, and disinfecting water supplies.

Please contact John Salinkas, P.G. at (570) 346-5532 if you have any questions about the Department's determination regarding your Water Supply.

Sincerely,



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

Enclosures:

- Results Table
- How to Interpret a Water Analysis Report – Penn State Extension
- Lead in Drinking Water – Penn State Extension
- Coliform Bacteria in Drinking Water – Penn State Extension
- Shock Chlorination of Wells and Springs – Penn State Extension

cc: Michael O'Donnell (email)
Briana Cunningham (email)
John R. Salinkas, P.G (email)
Complaint File #: 356411

Table 1- Water Supply Well Laboratory Analytical Results

Results in mg/L unless otherwise noted.	7/7/2010	12/2/2011	3/21/2012	5/5/2015	5/3/2021	5/3/2021	6/2/2021	10/23/2023	MCL/Standard
	Cabot	PADEP	Cabot	Cabot	PADEP	PADEP	PADEP	PADEP	
	Predrill	CID: 285311	Predrill	Predrill	CID: 356411	CID: 356411	CID: 356411	CID: 356411	
	Raw	Raw	Raw	Raw	Raw	Treated	Raw	Raw	
Dissolved Gases									
Methane	0.00011	<0.00790	0.00016	<0.0050	<0.0116	~	<0.0116	<0.0116	**7
Ethane	<0.0000250	<0.0198	<0.000025	<0.0050	<0.0124	~	<0.0124	<0.0124	No Standard
Propane	<0.00005	<0.0142	<0.0050	<0.0050	<0.0142	~	<0.0142	<0.0142	No Standard
Ethene	~	<0.0198	~	~	~	~	~	~	No Standard
General Chemistry & Total Metals									
Alkalinity	~	27.4	35	35.9	35.2	45.8	42.6	53.8	No Standard
Aluminum	~	<0.200	<0.050	<0.100	0.132000	0.241000	2.630000	<0.0150	0.2
Arsenic	~	<0.0030	<0.002	<0.0020	<0.00300	<0.00300	<0.00300	<0.00300	*0.010
Barium	~	0.054	0.063	0.0645	0.064	0.070	0.101	0.094	*2
Bromide	~	<0.2	<1.00	<0.10	<0.2	<0.2	<0.2	<0.2	No Standard
Calcium	~	9.870	11.6	11.9	12.300	14.300	13.310	18.100	No Standard
Hardness	~	33	~	42.5	41	49	46	60	No Standard
Iron	~	0.05	<0.050	<0.200	0.152	0.247	2.399	<0.100	0.3
Lead	~	~	0.0064	<0.00100	0.002250	<0.00100	~	0.003030	0.005
Lithium	~	<0.025	~	<0.0200	<0.0250	<0.0250	<0.0250	<0.0250	No Standard
Magnesium	~	1.937	2.3	2.49	2.44	3.14	3.06	3.46	No Standard
Manganese	~	<0.01	<0.025	<0.0020	<0.010	<0.010	0.063	<0.010	0.05
pH (units)	6.49	6.8	6.7	~	6.7	6.6	6.9	6.6	6.5-8.5
Potassium	~	<1.00	<1.00	0.664	<1.00	<1.00	1.46	1.09	No Standard
Selenium	~	<0.007	<0.002	<0.0020	<0.00700	<0.00700	<0.00700	<0.00400	*0.05
Sodium	~	1.713	3.34	1.95	1.88	1.95	2.18	2.37	No Standard
SPC (µS/cm)	146	74.50	91	~	87.20	102.80	104.40	130.10	No Standard
Strontium	~	0.06	0.077	0.0801	0.076	0.099	0.093	0.101	No Standard
Total Chloride	2.83	1.0	2.16	1.0	0.83	0.89	1.00	1.04	250
TDS	80	60	48	52.5	52	66	88	80	500
Total Sulfate	~	<15.0	8	7.5	6.36	6.37	7.31	9.13	250
TSS	<2	<5	<2.0	<3.00	<5	<5	16	<20	No Standard
Turbidity (NTU)	~	1.44	1	<1.0	4.76	8.05	54.00	<1	No Standard
Zinc	~	<0.010	~	<0.0200	<0.0300	<0.0300	0.09700	<0.0300	5
Dissolved Metals									
Aluminum, Dissolved (mg/L)	<0.1	~	~	~	~	~	~	~	No Standard
Arsenic, Dissolved (mg/L)	<0.003	~	~	~	~	~	~	~	No Standard
Barium, Dissolved (mg/L)	0.062	~	~	~	~	~	~	~	No Standard
Boron, Dissolved (mg/L)	<0.1	~	~	~	~	~	~	~	No Standard
Iron, Dissolved (mg/L)	<0.05	~	~	~	~	~	~	~	No Standard
Magnesium, Dissolved (mg/L)	3.68	~	~	~	~	~	~	~	No Standard
Manganese, Dissolved (mg/L)	<0.025	~	~	~	~	~	~	~	No Standard
Strontium, Dissolved (mg/L)	0.141	~	~	~	~	~	~	~	No Standard
Thallium, Dissolved (mg/L)	<0.002	~	~	~	~	~	~	~	No Standard
Vanadium, Dissolved (mg/L)	<0.01	~	~	~	~	~	~	~	No Standard
Bacteria									
E. Coli	~	~	~	Negative	~	~	<1/100mL	~	<1 MPN/100 mL
Total Coliform	26/100mL	~	~	Positive	~	~	>200.5/100mL	~	<1 MPN/100 mL

~ Not analyzed * Denotes Primary MCL < Indicates analyte was not detected above the laboratory reporting limit

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

Exceeds applicable standard