

September 9, 2024

**CERTIFIED MAIL NO.** [REDACTED]

[REDACTED]

Re: Stray Gas Investigation  
DEP Identifier: 370582  
Positive Determination  
Harborcreek Township, Erie County

[REDACTED]

The Pennsylvania Department of Environmental Protection (“Department”) has completed its stray gas investigation of your property illustrated in Figure 1. Based on observations during the site visits, information provided by you, and the review of relevant documents, the Department has determined that the stray gas detected on your property has most likely been caused by oil and gas activity, in particular, the hole observed in the casing of the Robert Lytle 1 (049-22768).

### CASE INFORMATION

Date of Complaint	Nature of Complaint (odor, taste, quantity, use, color, gas)
March 6, 2023	Gas detected on property

### INVESTIGATION SUMMARY

The Department was contacted on March 6, 2023, by National Fuel Gas (“NFG”) due to gas being detected on your property while conducting a routine check of their pipelines. NFG installed a plastic vent pipe (“Vent Pipe”) in an attempt to vent the gas. The bottom of the Vent Pipe was set approximately 7 feet below ground within a trench that NFG had excavated after initially detecting gas on the property. NFG reported they did slam bars (“SB”) in the area and around the exterior of the residence and only found gas near the excavation located approximately 10 feet from the residence.

The Department visited the site on March 13, 14, and 15, 2023. Gas samples were collected from the Vent Pipe (Vent pipe (Terra)), NFG meter on property to the west (NFG Meter (Terra)), and NFG’s abandoned line (NFG Abdn Line) on March 14, 2023. A gas sample was collected from a gas well behind Eastway Lanes (049-22768-Prod)(“Robert Lytle 1”) on March 15, 2023. All gas samples were sent to Isotech for analysis. The Department performed SB around the complainant’s residence and along the exterior wall, and around the Robert Lytle 1 well. Gas detected in the complainant’s back yard and around the building structure ranged from 5% gas to

39% gas. Gas from the Vent Pipe was detected at 43% LEL. Gas detected around the Robert Lytle 1 ranged from 4% LEL to 16% LEL.

A pressure test of the line that runs from the Robert Lytle 1 well to the kitchen was completed on June 1, 2023. Todd Landis, local well maintenance contractor, was contracted by the operator to complete the pressure test. The line held 20 lbs. of pressure for three hours.

Immediately following the June 1, 2023 pressure test, 100% gas was detected around the babbitt on the Robert Lytle 1 well. The operator stated that it had been leaking for a while, "since the last earthquake happened". A Notice of Violation ("NOV") was sent on June 13, 2023. The following violations were noted on the NOV:

- 78.86- Failed to Report Defective Casing Cementing
- 78.73- Failed to Construct and Operate Well in Accordance with Chapter 78
- 78.88- Failed to Notify Department Mechanical Integrity
- 78.81(a)1- Casing and Cementing Failed to Allow Control of the Well

On June 2, 2023, the Department collected two gas samples of the gas that was escaping from the babbitt (049-22768-Bab1 and 049-22768- Bab2). The samples were sent to Isotech for analysis.

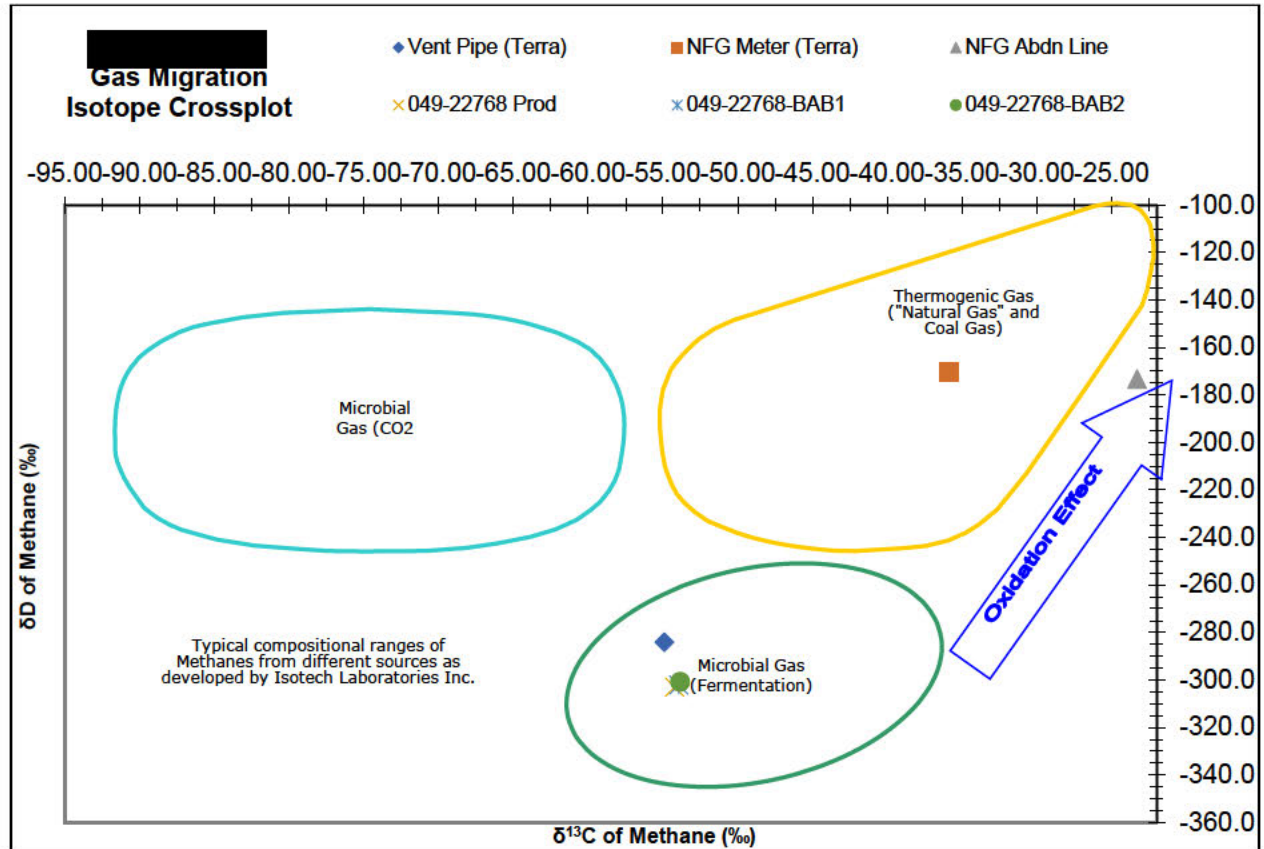
The Robert Lytle 1 production string was vented on August 9, 2023. No gas was detected around the well, but the babbitt was still leaking. On September 6, 2023, holes were drilled into the babbitt to allow the production string and the backside to vent. Robert Lytle 1, including the backside, continued to vent until it was plugged.

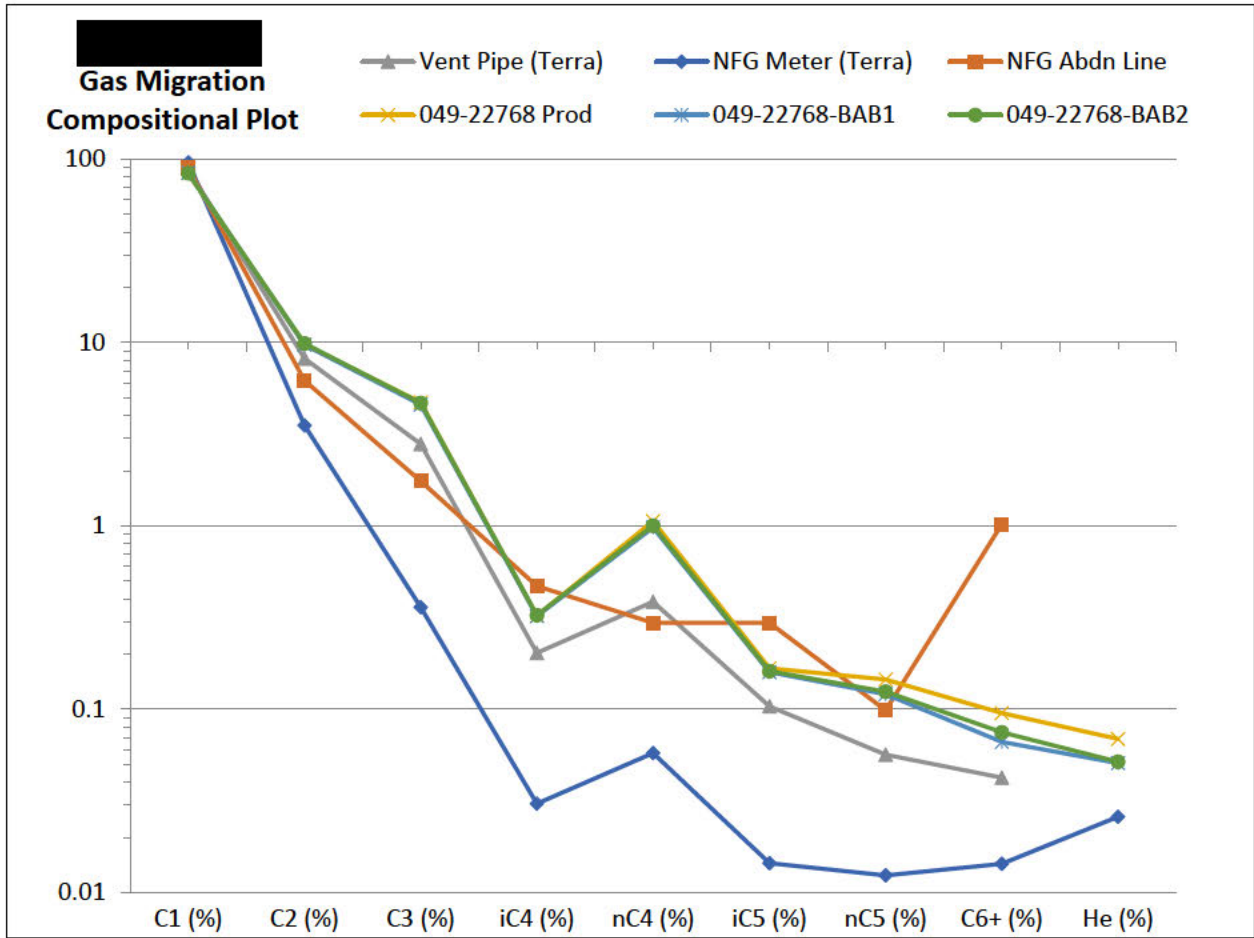
The Department monitored the gas in the Vent Pipe and around the exterior of the house. After the line was disconnected, and after the production string and backside were allowed to vent, the gas detected from the Vent Pipe and around the exterior of the house decreased to the point that no gas has been detected from the Vent Pipe since September 11, 2023, and around the exterior of the house since September 14, 2023.

An onsite meeting between the Department, the operator, and the operator's well tender was conducted on January 3, 2024 to discuss anticipated corrective actions. The Department suggested that the operator explore the options to plug the Robert Lytle 1 well. Subsequently, the operator hired Rindfuss Drilling to plug the well; plugging operations began April 22, 2024. The gas well was cemented to about 50 feet below the bottom of the surface casing. On May 7, 2024, a camera was run down the uncemented top section of the gas well bore to check for bubbling from the top of the cement plug; no bubbles were observed. A pinhole with water spraying into the casing was observed approximately 27 feet below the top of the surface casing, an indication that the surface casing was compromised. The pinhole within the compromised casing was likely the pathway for the migrating gas. Plugging operations were completed on May 7, 2024. Gas concentrations have continued to be non-detect in the Vent Pipe and around the exterior of the house since the plugging of the Robert Lytle 1 well.

### SAMPLE RESULTS

Isotopic results from collected and analyzed sample results are illustrated on a cross-plot of methane  $\delta^{13}\text{C}$  and  $\delta\text{D}$  and compositional plot below. Results indicate that the natural gas in the Robert Lytle 1 and Vent Pipe are similar. Results from Isotech have been attached.





Based on observations during the site visits, information provided by you, isotopic sampling, venting and plugging of the gas well, and the review of relevant documents, the Department believes the source of the gas detected in the Vent Pipe and soil near the residence was from 049-22768, the Robert Lytle 1 gas well. The Robert Lytle 1 gas well was plugged on May 7, 2024. No gas has been observed at the Vent Pipe or within the soil near the residence since plugging operations were completed. The Department considers this investigation complete and the complaint resolved.

Please contact Alicia Furey at 814.332.6132 if you have any questions about the Department's determination regarding the gas migration investigation.

Sincerely,

*Scott M. Dudzic*

Scott M. Dudzic  
Northwest District Oil and Gas Manager  
District Oil and Gas Operations

Enclosures:

Figure 1  
Laboratory Results

cc: Joe Lichtinger (via email)  
Alicia Furey (via email)  
Paul Strobel (via email)  
Jennifer McDonough (via email)

# Figures

Figure 1



# Investigation

Lawrence Park Township, Erie County  
CTS Complaint ID#: 370582  
10/26/2023

## Attachments



Lab #: 874747 Job #: 54925 IS-92109 Co. Job#:   
 Sample Name: 049-22768-BAB1 Co. Lab#:   
 Company: PA Dept of Environmental Protection   
 API/Well:   
 Container: Cali-5-Bond Bag   
 Field/Site Name: Terra St   
 Location: Harborcreek, PA   
 Formation:   
 Sampling Point:   
 Date Sampled: 6/02/2023 8:45 Date Received: 6/13/2023 Date Reported: 9/15/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0476			
Hydrogen -----	0.119			
Argon -----	0.0462			
Oxygen -----	1.03			
Nitrogen -----	5.23			
Carbon Dioxide -----	0.082			
Methane -----	78.53	-53.93	-302.1	
Ethane -----	9.08	-42.51		
Ethylene -----	nd			
Propane -----	4.29	-37.42		
Propylene -----	nd			
Iso-butane -----	0.301			
N-butane -----	0.916			
Iso-pentane -----	0.149			
N-pentane -----	0.113			
Hexanes + -----	0.0621			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1121

Specific gravity, calculated: 0.691

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 874748 Job #: 54925 IS-92109 Co. Job#:  
Sample Name: 049-22768-BAB2 Co. Lab#:  
Company: PA Dept of Environmental Protection  
API/Well:  
Container: Cali-5-Bond Bag  
Field/Site Name: Terra St  
Location: Harborcreek, PA  
Formation:  
Sampling Point:  
Date Sampled: 6/02/2023 9:10 Date Received: 6/13/2023 Date Reported: 9/15/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0333			
Hydrogen -----	0.0821			
Argon -----	0.334			
Oxygen -----	7.44			
Nitrogen -----	27.78			
Carbon Dioxide -----	0.074			
Methane -----	53.82	-53.86	-300.8	
Ethane -----	6.34	-42.49		
Ethylene -----	nd			
Propane -----	3.01	-37.34		
Propylene -----	nd			
Iso-butane -----	0.210			
N-butane -----	0.647			
Iso-pentane -----	0.104			
N-pentane -----	0.0804			
Hexanes + -----	0.0482			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 772

Specific gravity, calculated: 0.790

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 863372 Job #: 53918 IS-92109 Co. Job#:   
 Sample Name: Vent Pipe (Terra) Co. Lab#:   
 Company: PA Dept of Environmental Protection   
 API/Well:   
 Container: Cali-5-Bond Bag   
 Field/Site Name: Terra St   
 Location: Harborcreek, PA   
 Formation:   
 Sampling Point:   
 Date Sampled: 3/14/2023 10:06 Date Received: 3/20/2023 Date Reported: 3/28/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.923			
Oxygen -----	20.70			
Nitrogen -----	76.19			
Carbon Dioxide -----	0.073	5.9		
Methane -----	1.87	-54.90	-284.1	
Ethane -----	0.173	-42.78		
Ethylene -----	nd			
Propane -----	0.0592	-36.1		
Propylene -----	nd			
Iso-butane -----	0.0043			
N-butane -----	0.0082			
Iso-pentane -----	0.0022			
N-pentane -----	0.0012			
Hexanes + -----	0.0009			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 24   
 Specific gravity, calculated: 0.993

Remarks: Carbon of CO2 and propane obtained online via GC-C-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 863373 Job #: 53918 IS-92109 Co. Job#:   
 Sample Name: NFG Meter (Terra) Co. Lab#:   
 Company: PA Dept of Environmental Protection   
 API/Well:   
 Container: Cali-5-Bond Bag   
 Field/Site Name: Terra St   
 Location: Harborcreek, PA   
 Formation:   
 Sampling Point:   
 Date Sampled: 3/14/2023 10:17 Date Received: 3/20/2023 Date Reported: 3/28/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0255			
Hydrogen -----	0.0337			
Argon -----	0.0143			
Oxygen -----	0.31			
Nitrogen -----	1.46			
Carbon Dioxide -----	0.16			
Methane -----	94.06	-35.89	-170.3	
Ethane -----	3.46	-37.81		
Ethylene -----	nd			
Propane -----	0.353	-33.61		
Propylene -----	nd			
Iso-butane -----	0.0300			
N-butane -----	0.0566			
Iso-pentane -----	0.0142			
N-pentane -----	0.0122			
Hexanes + -----	0.0141			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1029

Specific gravity, calculated: 0.585

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 863374 Job #: 53918 IS-92109 Co. Job#:  
Sample Name: NFG Abdn Line Co. Lab#:  
Company: PA Dept of Environmental Protection  
API/Well:  
Container: Cali-5-Bond Bag  
Field/Site Name: Terra St  
Location: Harborcreek, PA  
Formation:  
Sampling Point:  
Date Sampled: 3/14/2023 10:22 Date Received: 3/20/2023 Date Reported: 3/28/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.943			
Oxygen -----	20.42			
Nitrogen -----	77.10			
Carbon Dioxide -----	0.32			
Methane -----	1.09	-23.29	-173.3	
Ethane -----	0.0753	-27.9		
Ethylene -----	0.0001			
Propane -----	0.0213	-28.0		
Propylene -----	nd			
Iso-butane -----	0.0057			
N-butane -----	0.0036			
Iso-pentane -----	0.0036			
N-pentane -----	0.0012			
Hexanes + -----	0.0124			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 14

Specific gravity, calculated: 0.997

Remarks: Carbon of ethane and propane obtained online via GC-C-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 863375 Job #: 53918 IS-92109 Co. Job#:   
Sample Name: 049-22768 Prod Co. Lab#:   
Company: PA Dept of Environmental Protection   
API/Well:   
Container: Cali-5-Bond Bag   
Field/Site Name: Terra St   
Location: Harborcreek, PA   
Formation:   
Sampling Point:   
Date Sampled: 3/15/2023 10:30 Date Received: 3/20/2023 Date Reported: 3/28/2023

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0668			
Hydrogen -----	0.471			
Argon -----	0.0117			
Oxygen -----	0.17			
Nitrogen -----	2.59			
Carbon Dioxide -----	nd			
Methane -----	80.98	-54.22	-303.1	
Ethane -----	9.41	-42.75		
Ethylene -----	nd			
Propane -----	4.56	-37.76		
Propylene -----	nd			
Iso-butane -----	0.313			
N-butane -----	1.03			
Iso-pentane -----	0.162			
N-pentane -----	0.141			
Hexanes + -----	0.0924			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1167

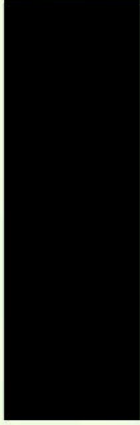
Specific gravity, calculated: 0.680

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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