INTRODUCTION

We, the members of the Forty-Fifth Statewide Investigating Grand Jury, having received and reviewed evidence regarding allegations of violations of the Clean Streams Law occurring in Washington County, Pennsylvania, pursuant to Notice of Submission of Investigation Number 51, do hereby make the following findings of fact, conclusions, and recommendation of charges.

FINDINGS OF FACT

This presentment arises from an investigation of environmental crimes that occurred during the installation of a piece of a pipeline in Washington County, involving an underground tunneling technique called horizontal directional drilling. National Fuel Gas Supply Corporation was the permittee for the pipeline project and Southeast Directional Drilling was the subcontractor in charge of the horizontal directional drilling.

This Grand Jury finds that National Fuel Gas Supply Corporation and Southeast Directional Drilling committed criminal violations of the Clean Streams Law during the pipeline project, which took place at Route 22 near 121 Campbell Road, Bulger, PA.

I. A Description of the Companies

National Fuel Gas Supply Corporation, was originally incorporated in 1902 and is based in Williamsville, New York. The company is a diversified energy company with $6.2 billion in assets. The focus of the company is divided into five segments: exploration and production, pipeline and storage, gathering, utility and energy marketing.

Southeast Directional Drilling, LLC was founded in 2002 and is based in Casa Grande, Arizona. The company provides horizontal directional drilling services to contractors and gas companies. It offers horizontal directional drilling for natural gas, utility, crude/product, telecom and other pipeline projects.

II. Pipeline Installation and Horizontal Directional Drilling

The Grand Jury heard testimony that pipelines are utilized across the Commonwealth for a variety of purposes. They are classified by the type of product that they are carrying. One type of pipeline, called gathering lines, transports unprocessed natural gas from a well pad to either a compressor station or other facility to process the gas or to a transmission line. Transmission lines move the processed gas from that point to various distribution companies. Sometimes transmission lines can span thousands of miles and can be pressurized between 200 and 1,500 pounds per square inch (psi). Once the natural gas reaches the distribution company, the gas in the pipe will then have an odorant introduced and will lessen the pressure to a distribution level, which is between .25 and 200 psi. Once the odor is added and the pressure is reduced, the gas can travel into a distribution line which will transport the gas to consumers.

These various pipelines form a complex spiderweb underneath the ground in the Commonwealth. Natural gas companies are often replacing older lines or installing additional pipeline to transport product across the Commonwealth. In order to install new pipeline or replace

older sections, a company must employ one of two methods: 1) trenching or 2) drilling underground in a horizontal direction, commonly known as horizontal directional drilling ("HDD"). Trenching involves using earth moving equipment to dig out a trench from above the earth. Once the trench has been dug, the section of pipe can be laid inside the trench and then covered with earth. The HDD method is often utilized in more heavily populated areas, as it can cross a road or a waterway underground without disturbing the surface.

Horizontal directional drilling entails drilling a tunnel underground, typically under a road or a waterway. Once the tunnel has been drilled, a section of pipe is pulled through the newly completed tunnel. The drill follows a path underground that is specifically surveyed in advance. Various instruments can be utilized to ensure that the drill is following the correct path as it is steered underground. The tunnel is kept open and the drill is lubricated by a drilling mud that is injected along the drill path as the drill bit moves. The drilling mud is often composed of water and bentonite clay as well as other additives that the drilling company determines are necessary. According to one driller who testified before us, the drilling fluid is "the blood or the life line of the drill." It helps to lubricate the drill bit, it can harden and aid in keeping the hole open and also assists in carrying the drill cuttings out of the hole. Through a process of circulation, the drilling mud returns – that is, it flows back up and out of the tunnel along with the cuttings made by the drill bit, where it is then treated to remove the solids so that it can be injected back down into the drill path.

Evidence before the Grand Jury established that HDD is the chosen technique to reduce or avoid environmental impacts on the surface of the land. However, when a project does not go according to plan, it is not without its environmental impacts. The largest and most common issue occurs when the drilling mud flows outside of its intended path and comes to the surface in

locations other than the drilling entry and exit pits. In addition to the drilling mud coming to the surface in locations other than the pits, it is also possible that the drilling mud can stray from the tunnel and travel underground and never make it to the surface. It can travel through fractures in the rock or into voids in the rock that are naturally occurring or the result of mining activity. It can also travel through underground water. Sometimes these losses of returns will not be caught by the drilling company because the loss of drilling fluids could happen slowly such that it might be unnoticed by the crew. In spite of the fact that losses of drilling mud might be impacting groundwater, in 2015, drilling companies were not required to report these incidents to the regulatory agencies unless the mud actually made its way to the surface.

We heard testimony that one step that a drilling company can take to try to prevent loss of returns or inadvertent returns is to increase the viscosity of the drilling fluid so that it has less of an opportunity to leave the drill path and enter into the rock formation or into underground water. However, this is not foolproof. A witness testified that "if there is enough water present in the ground, it is going to thin out our drilling fluid" which then allows it to flow into smaller fractures and travel through the aquifer, continually becoming thinner and more watery.

On the occasions where the loss of returns is noticed by the company, they will send workers to walk along the drill path to see if they can find a place where the mud made its way to the surface. When the drilling fluid does make its way to the surface, it is known as an inadvertent return and can have devastating environmental impacts. We learned first-hand about those impacts during this investigation.

The impact of an inadvertent return can be compounded depending on what types of additives are used during the drilling process. We learned that many of the additives that are used during the process are also used in the drilling of water wells, which presumably makes them safe

for consumption if they should happen to get into an individual's drinking water supply. We learned that there is an industry certification for products that are approved for use in the drilling of water wells: NSF/ANSI 60. The bentonite that is added to water to create the typical drilling fluid for HDD projects is NSF/ANSI 60 certified. While today, all additives that are included in the drilling fluid must be either individually approved by the Department of Environmental Protection ("DEP") or NSF/ANSI 60 certified, that was not the case in 2015. We learned that some of the additives that were used by drillers in 2015 were NSF/ANSI 60 certified while some were not. We learned that some additives, in addition to not being NSF/ANSI 60 certified, had proprietary designations that make it nearly impossible to know what chemicals are actually included in the product.

III. The Westside Expansion & Modernization Project

National Fuel operates a transmission pipeline in Southwestern Pennsylvania known as Line N. It was originally constructed in 1947 out of bare steel. The company had begun the process of replacing and modernizing this pipeline with a high-strength, coated pipe and had completed 50 miles of updating prior to the project under investigation. In their application to the Federal Energy Regulatory Commission for this project, National Fuel requested permission to replace approximately 23 miles of 20 inch diameter pipeline with an equivalent length of 24 inch diameter pipeline. The 23 miles was divided into two sections: 1.93 miles in Mount Pleasant Township, Washington County, Pennsylvania and then 21.3 miles that would span Mount Pleasant, Robinson and Smith Townships in Washington County, Findlay Township in Allegheny County and Independence Township in Beaver County. This project, known as the Westside Expansion and Modernization Project also included the installation of additional equipment at two compressor stations along the path of the pipeline.

In order to move forward on this project, various permits were required. We have learned that there is a complex patchwork of permits that are required from various agencies in order to move forward with a pipeline project. Some of the permits that are required are federal and some come from the state. For this particular project, NFG submitted a request for a Certificate of Public Convenience and Necessity on February 6, 2014 to the Federal Energy Regulatory Commission (FERC). In their application, National Fuel asserted that the project was designed to minimize its impact on landowners and the environment. After review of their entire application packet, FERC issued an Order on March 2, 2015 that granted the authorizations requested by NFG and listed the conditions that the project was subject to. The Order indicates that the certificate is conditioned on (1) National Fuel's completion of the authorized construction within two years of the date of the order; (2) National Fuel's compliance with paragraphs (a), (c), (e) and (f) of section 157.20 of the Commission's regulations; and (3) National Fuel's compliance with the environmental conditions listed in the appendix to the order. The other federal permit application that was submitted by National Fuel was a joint application under the federal Clean Water Act and the state Dam Safety and Encroachments Act, which allowed multiple stream crossings during the course of the project.

National Fuel also filed the necessary state permit applications. In addition to the joint application under the Dam Safety and Encroachments Act; a Water Obstruction and Encroachment Permit, an Erosion and Sediment Control General Permit and a general permit for Discharges from Hydrostatic Testing of Tanks and Pipelines under the National Pollutant Discharge Elimination System were applied for and received prior to the start of the project.

IV. Work Begins at Route 22 HDD site

Once all the permits had been acquired, National Fuel sent their contractor, Associated Pipe Line, to begin the work of actually preparing the ground for the placement of the replacement pipeline. Associated Pipe Line, in turn, hired Southeast Directional Drilling to complete the portions of the project that required HDD. We learned that part of the process of preparing for a HDD is the creation of a profile which lays out the path that the underground tunnel will follow and how deep the drill path will go. For this project, Southeast Directional Drilling submitted its profile on June 10, 2015.

Work began on the project with an orientation at the Associated Pipe Line yard on June 9, 2015, followed by three days of site preparation. The drilling of the pilot hole began on June 12, 2015 and the project continued until the replacement pipe was pulled into place on August 31, 2015.

V. And Problems Follow Almost Immediately

The first time that Southeast Directional Drilling lost circulation occurred only two days into the drilling. According to internal documentation reviewed by the Grand Jury, this incident occurred on June 13, 2015. When Southeast Directional Drilling lost circulation that day, they stopped drilling once they became aware of the loss of drilling fluid and then pulled the drill back out of the hole. After discussions about how to proceed, they resumed drilling and regained returns. They lost returns a second time that day but continued drilling and, after four minutes, regained the returns.

The first inadvertent return associated with the project occurred on June 30, 2015. According to Southeast Directional Drilling internal documentation, the inadvertent return occurred as the drill bit was nearing the exit pit. According to the foreman on the Southeast

Directional Drilling crew, it is common to have an inadvertent return when the drill bit is approaching the exit pit. He testified that when the drill bit is at this location, it has left the rocky formations underground and is traveling only through dirt. The dirt will not handle the pressure of the drilling mud and can allow that mud to flow in different directions and not remain along the path of the drill bit. That very phenomenon happened at this particular project. Southeast Directional Drilling cleaned up the drilling mud that came out of the ground and then immediately resumed drilling.

We learned that there was another inadvertent return that happened on July 22, 2015. According to the foreman, this particular inadvertent return was smaller and located in a place that would not be noticeable unless an individual was specifically looking for it. He recalled that it was in a deep ravine that had a lot of foliage around it and that it would not be visible unless someone was standing right on top of it.

The foreman testified that when the inadvertent return was discovered on the July 22, the crew added an additional additive to the drilling mud that is supposed to plug fractures in the formation that might allow the drilling mud to escape its normal path. The particular additive deployed was a product known as "magma fiber fine." This particular product is NSF/ANSI 60 certified. The foreman testified that after pushing this additive down the hole to assist with plugging any fractures, his crew did not resume drilling that day, as the inadvertent return was discovered towards the end of the day.

He testified that his superiors were contemplating "pretending they didn't see it more or less." He went on to explain that it is common within the industry to "look the other way" and not report smaller inadvertent returns. His recollection was that the supervisor on the project from Southeast Directional Drilling would have made this decision in concert with those above him.

The foreman was shown the "Daily Report of Drill" for July 22, 2015 and acknowledged that it had no information about an inadvertent return or the installation of a magma fiber plug. He acknowledged that it was his job as the foreman to fill out the daily reports and that he was directed to not include information about the inadvertent return on the report. He explained, "I was in the contractor mentality and that is—that is just the nature of the beast. You are in the contractor mentality. You want to try to get the job done and not have any issues; but then whatever issues occur, you try to make them look minimal."

Ultimately, the return was not reported to Associated Pipe Line, National Fuel or to regulators on July 22.

The foreman for Southeast Directional Drilling went on to testify about his recollection of events that occurred on July 23, when he returned to the work site. On arrival that morning, he discovered that the entire entry pit had been drained. He explained that the entry pit always remains full of drilling fluid, even at night when they are not actively drilling. However, when he arrived in the morning, it was empty, meaning that all of that fluid travelled down the hole to the location of the inadvertent return. He estimated that it was a "couple thousand gallons of drilling fluid" that flushed out of the hole. He went on to state that some of that drilling fluid would not have come out of the inadvertent return and could have gone into the formation or into the groundwater and remained there.

Upon learning that the entry pit had drained of drilling fluid, the foreman had his crew walk the line. It was during this exercise that they discovered that the small, hidden inadvertent return from the afternoon before had now become a large return that had made its way into the small stream directly below the outcropping where the fluid had flowed the day before. The creek had turned a greyish color due to drilling fluid coating the entire bed of the creek. At this point, because

the inadvertent return was much larger and obviously visible, the company reported it to the contractor and operator. It was ultimately reported to regulatory agencies as well. Personnel from Associated Pipe Line came out to the site to assist in the cleanup process, resulting in a crew of 15-20 people. They brought sandbags to contain the drilling fluids and prevent it from continuing to enter the stream. When the foreman went down to the stream the morning of July 23, he recalled the drilling fluid was still actively flowing out of the side of the slope and into the stream. He testified that one could assume that that meant that the drilling fluid that was observed flowing out on the afternoon of July 22 had continued to flow all through the night and was still continuing to flow the next morning. When asked about the company estimate for the amount of drilling fluid spilled as a result of the inadvertent return (50 gallons), the foreman acknowledged that the number was probably not accurate. He testified "[i]t is pretty much not impossible, but it is very difficult to assume the amount."

From internal Southeast Directional Drilling documentation, we learned that drilling remained on hold until July 27, at which time the company started with a larger diameter drill bit and had crew members constantly watching the location of the inadvertent return for signs of more fluid flowing out. Drilling continued, aside from a slight hold due to landowner complaints, until August 7, 2015. On that date, there was the discovery of an additional 20 gallons of drilling fluid coming out of the previously discovered inadvertent return. Once discovered, drilling shut down for the day. Documentation indicated that drilling resumed the very next morning and then continued without incident through the remainder of the project.

VI. Problems During the Hydrostatic Test

We learned that a standard part of pipeline construction is the performance of a hydrostatic test to ensure that the pipeline will be able to withstand the pressure of the product flowing through the pipeline prior to allowing it to be put into service. This process utilizes large amounts of water to be injected into the pipeline under high pressure. Once the water makes its way through the new portion of the pipeline, it will then be qualified as industrial waste due to the rust and other contaminants within the pipe that the water will mix with. Operators must apply for and receive a permit from DEP to dispose of the water utilized for such activity. DEP had provided National Fuel with a National Pollutant Discharge Elimination System ("NPDES") permit for the discharge of fluids associated with the hydrostatic testing of the pipeline once it was in place. The permit allowed National Fuel to discharge treated hydrostatic test water on the condition that "all discharges of floating materials, oil, grease, scum, sheen and substances which produce color, tastes, odors, turbidity or settle to form deposits shall be controlled to levels which will not be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life."

On September 10, 2015, another neighbor called DEP to report that National Fuel was discharging water from their hydrostatic test onto his property and that the discharge had left rust-like stains on his hay fields. The neighbor went on to report that National Fuel had left the valves on two tanks open at the end of a work day, which allowed a large amount of water that had been collected in the tanks to flow out onto the ground. Based on this complaint, a water quality specialist from the Clean Water Program was sent out to the location to inspect National Fuel's activities and to determine whether they were in compliance with their NPDES permit.

While on site, the water quality specialist met with the neighbor and reviewed photographs that he took of the activities. She inspected the site herself and ultimately determined that National

Fuel's activities had damaged the neighbor's hayfields and confirmed that the connection valves on the two tanks were left open. Based on her inspection, the water quality specialist issued a Notice of Violation to National Fuel for failure to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of a permit. We reviewed documentation from National Fuel that was submitted to DEP indicating that the total release from this incident was 70,568 gallons.

VII. Impact on Neighbors

To be clear, the criminal statutes at issue here do not require proof that National Fuel or Southeast Directional Drilling's actions caused any specific medical condition to any neighbor, nor do they require proof of impact to any particular drinking water well. Rather, the statutes are designed to protect against the risk of adverse effects on the general health, safety, and welfare of the community by focusing on the general impact to water of the Commonwealth. Neighbors around this project testified to the impact that this incident had on them, illustrating the consequences of the inadvertent returns from the drilling.

Brian Coppola has been a 30 year resident of Robinson Township, Washington County. When he moved into his house, he had a drinking water well installed to provide for all of his water needs, as his house was not within reach of a public water supply. He testified that he was at work on July 23, 2015 when one of his neighbors called to tell him that there was something happening in the stream that runs through his property. He returned home to find vacuum trucks parked on the road and workers in the stream. When he asked what had happened, he was told that there had been an inadvertent return. Although he did not know what that was at the time, he could see that the stream was discolored and assumed that the company had experienced some sort of blowout.

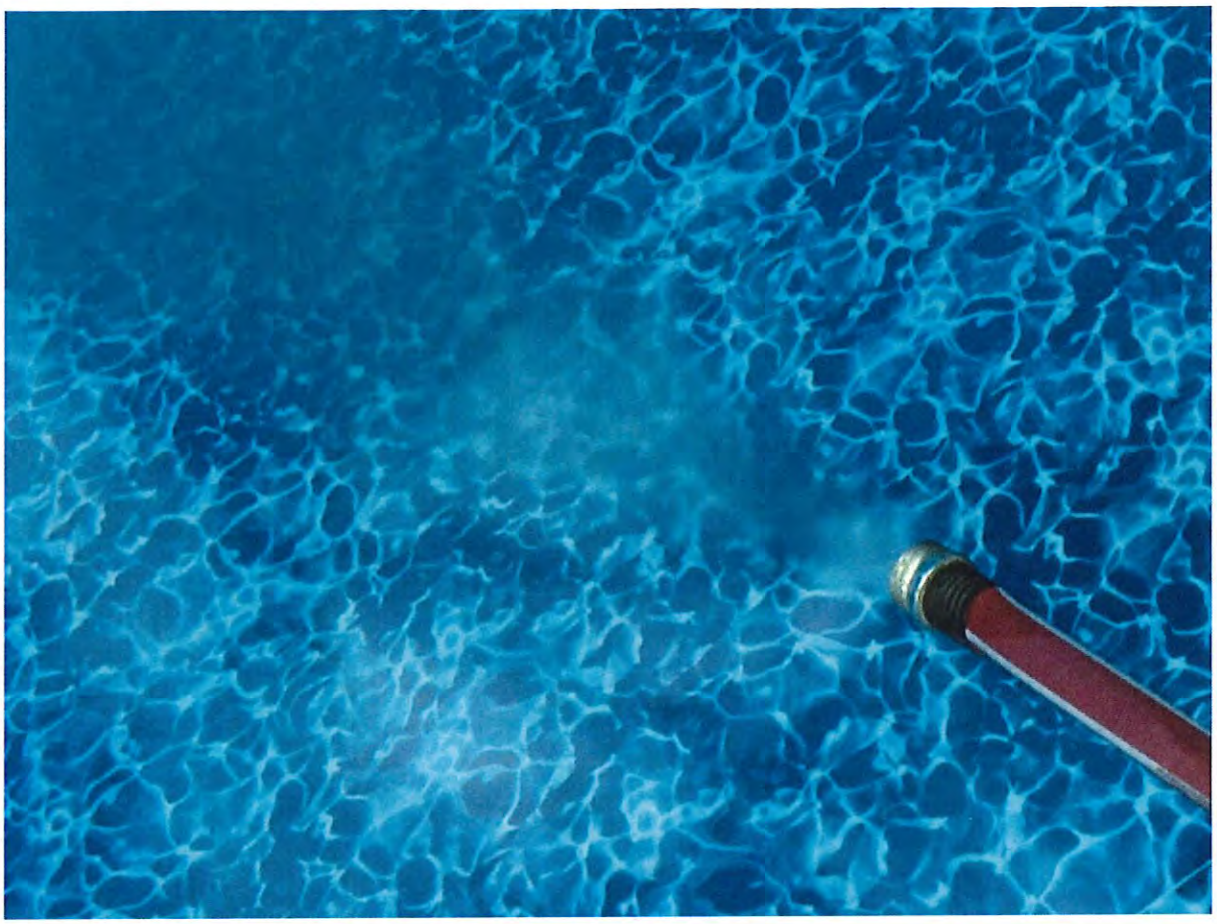
He testified that the stream is normally crystal clear. He and another neighbor walked along the stream in an attempt to follow the pollution until the point that the stream ran clear again. He testified that he walked approximately a mile downstream and the water was still abnormally cloudy.

After walking the stream and taking some photographs, he alerted the National Response Center about the incident as well as some of his neighbors. He advised his neighbors to shut off their water wells and to refrain from drinking their water. At his home, he shut off his water well to prevent the contamination from making its way into his plumbing and he stopped drinking the water. He eventually discovered that the same contaminants that he observed in the stream had in fact made their way into his water well. He retained a lawyer who insisted that the DEP take a sample from his well to analyze for any contaminants. In addition to an email request, the attorney's email included two pictures of Mr. Coppola's water:

Before the drilling began, Mr. Coppola's water was clear; it was not yellow or orange, and did not have sediment.

DEP personnel did respond to his home to take a sample of his water. Additionally, an environmental consulting firm, GAI, which was retained by National Fuel, responded to take a sample of his water as well. He never received anything other than the lab results from DEP. From GAI, he received a letter indicating that the Total Suspended Solids and Turbidity of his water was higher than expected. They recommended cleaning the well through surging and extended pumping and theorized that "if the elevated TSS and turbidity are found to be the result of the inadvertent HDD return, this condition would be expected to be temporary as a finite volume of drilling fluids were introduced to the HDD borehole and should significantly improve with continued pumping of the well." Mr. Coppola's attorney was not happy with the parameters used by the lab when they analyzed the first water sample and he demanded a more expansive list of parameters be used and another sample be taken. When GAI took another sample and analyzed it for the broader list of parameters, they found additional contaminants in his water and suggested that the solution would be to install a filter onto his water well prior to the water entering his house. The letter from GAI failed to point out that, in addition to the contaminants that they listed, the lab also found chloroform and surfactants in his water supply. Mr. Coppola to this day cannot use the water in his well for any purpose.

The Grand Jury heard testimony from James Kramer, who also lives near the route of the HDD project. When the project was originally discussed, the pipeline was set to run right through the center of his property. He objected to the path and it was ultimately moved so that it only ran under a small piece of his property. He testified about his observations related to the inadvertent return. He recalled using his hose to take water from his well to add to his pool and observing a cloudy, white-colored water leaving his hose and entering his pool.



GAI came out to his property to sample his water. He recalled learning from GAI that the total suspended solids and the turbidity of his water was higher than most recommended levels. GAI sent him a letter after the sampling event that indicated that the higher levels will continue to decrease with use of his well. Mr. Kramer stopped using his water for a period of time but now uses it again to fill his pool and hot tub.

The Grand Jury also heard testimony from Brenda Vance, who lives in a house on a piece of property that has been in her husband's family for decades. The house is located directly off Route 22. In 2014, they built their house and had a well drilled to provide them with water. They had no problems with their water and used it for cooking, cleaning and bathing. She recalled that the first time she heard about National Fuel was when they "had that blowout out there." She testified that she was going down her driveway to leave for the day when she looked over at the

creek that runs beside it and noticed that it looked milky white. She thought it was just some fog hanging low over the creek and left for the day. It was not until she came home that evening and saw a man in a truck in her driveway that she realized that there might be a problem. The young man asked her if she had seen her creek. When she looked and saw that it was still white, she called her neighbor, Brian Coppola, who told her that there had been an incident with National Fuel. He gave her a telephone number to call. She called and later that evening, three gentlemen from National Fuel came out to her house to speak with her. She explained to them that the water coming out of her tap had been white but that she ran the water for quite some time and it began to clear up. The National Fuel employees explained to her that the white color was caused by the bentonite that they were using to perform the HDD. She told them that she had a reunion planned for that weekend at her house and she was concerned with the people getting sores or experiencing other issues from bathing in the water. They explained to her that "they use [the bentonite] in spas. There is nothing to worry about." They went on to tell her that if the bentonite had made it into her well, it would eventually settle to the bottom and just stay in her water well forever. National Fuel sent GAI out to sample her water and have it analyzed. GAI ultimately sent her a letter dated August 25, 2015, indicating that her water source "is not currently impacted by construction activities of National Fuel and Gas." No further explanation was offered to her and in fact, she was surprised to learn that her neighbor, Mr. Coppola, had a second set of samples collected and analyzed by GAI.

She recalled that DEP came and took a sample of her water as well. In spite of explaining to the water quality specialist that her water turned white at the same time that her creek changed color - - which was at the same time that National Fuel had their inadvertent return - - the water quality specialist investigated her complaint as if it was tied to a particular gas well that is in close

proximity to her home. She received a letter from DEP in December, 2015 that indicated that her water supply was "not adversely affected by the drilling, alteration, or operation of an oil or gas well." After she received this information from both DEP and GAI, she continued to purchase bottled water at her own expense.

VIII. DEP's Response

DEP was first alerted to the inadvertent return on July 23, 2015. On that date, a water quality specialist from DEP's Oil and Gas program responded. No photographs were taken. No samples of the stream were collected. After discovering that the pipeline at issue was a transmission line, the case was transferred from the Oil and Gas Program to the Clean Water Program, as the Oil and Gas Program only covers incidents related to gathering lines.

The case made its way to the Clean Water Program the following day, at which time a water quality specialist from that program went to the site for an inspection. He made observations at the stream and took photographs. Again, no samples were collected. According to this water quality specialist, the reason that DEP does not require samples to be taken during an investigation of an inadvertent return is because a Clean Streams Law violation can be proven without any chemical analysis, that is, the impact can be seen visually in the stream. Ultimately, a Notice of Violation was sent to National Fuel for the impact that was observed in the stream.

In addition to the investigation of the impact of the inadvertent return to the surface waters, the landowners mentioned above complained to DEP that the return had impacted ground water and had contaminated their drinking water wells. The Notice of Violation that was issued to National Fuel did not include any language related to their activities impacting groundwater.

One water quality specialist from the Clean Water Program testified about the responsibilities of a water quality specialist in the Clean Water Program. He indicated that they

are charged with inspecting facilities that have a NPDES (National Pollutant Discharge Elimination System) permit that allows them to discharge pollutants under limited circumstances and conditions. This includes sewage plants, industrial facilities, chemical facilities, junkyards and other manufacturing facilities. This employee went on to explain that his program is involved in inspecting or responding to complaints related to pipelines that are classified as transmission lines. He has responded to several inadvertent returns that have occurred related to the construction of transmission lines and testified that he has never collected stream samples, even when the return has made its way to the waterway. He also explained that it has never been a part of his investigation of an inadvertent return to determine whether or not the return had an impact on groundwater. The inadvertent return that occurred on July 23, 2015 was unusual, in that it was the only time in his career as a water quality specialist in the Clean Water Program at DEP that he was called upon to investigate a potential impact to a private drinking water supply. He explained that his position "strictly focuses on stream pollution and doesn't incorporate any drinking water supply" He testified that he was not given any particular assistance or training with respect to how to conduct a water supply complaint investigation, although the environmental group manager within the Clean Water Program for his region told him which parameters to request the lab to use in its analysis. He was asked what program at DEP would typically investigate complaints about contamination of a private drinking water supply and he responded that he did not believe there is "any aspect of the Department that looks into private drinking wells"

He testified that, for the inadvertent return that occurred on July 23, 2015, he requested information from National Fuel regarding the additives used and that they provided him with "Safety Data Sheets" for the magma fiber and bentonite. He reviewed those sheets and found nothing of concern.

He went on to testify that he and a co-worker did collect samples at Mr. Coppola's residence and that those samples were sent to the DEP Bureau of Labs for analysis. He could not recall ever seeing the results from the sampling and indicated that it would have been another water quality specialist who was the lead on that investigation. The Grand Jury reviewed laboratory reports related to the analysis done at Mr. Coppola's water well. The DEP lab did do a microscopic analysis for bentonite and determined that it was not present in the sample collected, but noted that there was a trace amount of soil dust contained in the sample. The results were provided to Mr. Coppola with no further analysis from DEP.

DEP was also involved in sampling water at the Vance home. This sampling and analysis fell to a water quality specialist from the Oil and Gas program instead of Clean Water. In spite of Mrs. Vance complaining that her water appeared to be impacted by the inadvertent return, DEP determined that her complaint would be investigated in relation to the gas well pad that was closest to her home. The water quality specialist who undertook this investigation collected samples and requested that they be analyzed for the standard suite of parameters that DEP has stated are typically associated with contamination from unconventional oil and gas activity. He did not request analysis for bentonite because he did not know that the Bureau of Labs could perform such analysis. At the end of the investigation, he authored a letter to Mrs. Vance indicating that there were several constituents that were found in her water that were above recommended limits. The letter stated that "[w]hile the constituents listed above are common pollutants found in oil and gas fluids, the Department's analysis of the sample results could not conclude that these elevated levels were caused by oil and gas activities."

Ultimately, DEP assessed a $5,741.00 civil penalty to National Fuel for the impact to the stream. National Fuel signed off on the civil penalty on July 19, 2017. The Consent Assessment

did not address the groundwater or drinking water supplies that were affected, and there was no requirement that National Fuel conduct any remediation to ensure the removal of any drilling fluids that had entered the aquifer.

Finally, we reviewed a Certification of Records from DEP to confirm that both National Fuel and Southeast Directional Drilling never applied for, nor were granted a permit or an exemption to a permit pursuant to the Clean Streams Law to discharge any waste from any source at or near the horizontal directional drilling that occurred at Route 22 near 121 Campbell Road into any waters of the Commonwealth, including an unnamed tributary to St. Patrick's Run.

IX. Failure to Report

During the course of this investigation, the Grand Jury learned that in addition to failing to report the inadvertent return that occurred on July 22, Southeast Directional also failed to report other information.

The failure was selective. As noted above, Southeast Directional Drilling used magma fiber to plug the inadvertent return, and this additive was duly reported to the Federal Energy Regulatory Commission, to the Environmental Protection Agency and to the DEP. We also reviewed a July 28, 2015 memorandum from Southeast to individuals at Associated Pipeline that addressed the magma fiber The Safety Data Sheets for magma fiber fine were also provided to GAI so that the lab would know to look for that particular additive in its analysis.

However, what Southeast Directional Drilling failed to disclose was that they also used another additive during the project. The Grand Jury reviewed an invoice from Drilling Mud Direct—the company from which Southeast purchased their additives—for a product that was not included in any of the documentation sent to any of the regulatory agencies. On July 10, 2015, Southeast picked up 15 five-gallon tubs of Lubra Star Torque Control to be used on this particular

project. Testimony from a driller on the project confirmed its use. While magma fiber was NSF/ANSI 60 certified, Lubra Star was not. The Grand Jury could not learn very much about the product since much of its chemical makeup is proprietary. What was discovered, however, is that the product can be fatal if swallowed and enters airways.

A hydrogeology manager from GAI who testified before us indicated that he had been in communication with National Fuel to ascertain what additives had been utilized on the project. He confirmed receiving the Safety Data Sheets related to the specific mixture of bentonite and the magma fiber from National Fuel. He testified that he had never been informed about the use of Lubra Star during the project. He was shown the Safety Data Sheet for the product and confirmed that much of the information was listed as proprietary, which would limit GAI's ability to analyze a water sample for the product. As a result, GAI could not say whether any of the drinking water supplies that they analyzed were impacted by the product. The GAI expert testified that, if he had been provided with the product name and Safety Data Sheet in 2015, he would have "done what [he] could to find out what those proprietary compounds were."

X. Ongoing Contamination

We have learned that one of the consequences of inadvertent returns and loss of returns is that much of the drilling mud that leaves the drill path and enters fractures in the rock can then travel in unknown paths. The hydrogeologist from GAI testified that it is possible that some of the drilling mud that gets lost below ground can intermingle with groundwater that is also flowing below the ground. He went on to explain that having information about losses of return would help to evaluate how much drilling mud could have escaped into the formation, and how long the material would remain in the formation, continuing to potentially impact groundwater. The expert testified, however, that he was not provided with the necessary data.

The witness further testified that, in the area of the inadvertent return, pressure within the bore hole pushed the drilling mud away from the drill path and to the surface to distances ranging from 390 to 600 feet away. He confirmed that many of the potentially impacted drinking water wells are either within this distance or only slightly further away.

We learned that there are protocols that can be followed by a company or a private property owner to clean up a property that has been impacted by pollution. DEP has the authority to require an operator to clean up pollution that was caused by their activities. In this case, DEP required the operator to remove the visible drilling mud from the stream that had been impacted by the inadvertent return but they did not require any sort of remediation of the drilling mud that had impacted the groundwater. Because DEP did not require the operator to perform any such remediation, the pollution underground will remain in place forever, or at least until a private citizen endeavors to clean it up.

We also heard testimony from Steven Treschow, a professional geologist who evaluated the Coppola residence in order to determine what would be required to remediate the

groundwater flowing below the property. The process would require the installation of monitoring wells and multiple rounds of sampling as well as the installation of groundwater extraction wells that would pull the water out of the aquifer so that it could be cleaned of any drilling mud and then re-injected. The remediation would take several years and cost more than $2 million.

XI. Applicable Environmental Statutes

The Grand Jury learned about the special environmental statutes that govern this conduct. The relevant portions of the Clean Streams Law define "industrial waste" as any liquid or solid resulting from manufacturing or industry whether or not generally characterized as waste. "Pollution" is any contamination of waters of the Commonwealth that is likely to render those waters harmful, detrimental, or injurious to public health, safety or welfare, or to legitimate beneficial use. "Waters of the Commonwealth" includes any rivers, streams, rivulets, lakes or springs containing surface or underground water.

We also reviewed the various statutory provisions within the Clean Streams Law that are pertinent to our investigation. Section 691.301 makes it a crime to discharge industrial waste into the waters of the Commonwealth. Section 691.401 prohibits the discharge of any substance resulting in pollution into any of the waters of the Commonwealth. Section 691.611 makes it a crime to fail to comply with any order or permit or license of the Department…or to hinder, obstruct, prevent or interfere with the department or its personnel in the performance of any duty.