

NYC Department of Environmental Protection
Bureau of Water & Sewer Operations, Environmental Health & Safety (EHS)

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Environmental Health & Safety News for BWSO



"The on-going maintenance and development of our New York City (NYC) 100+ year old shafts are clearly in good hands for years to come."
—BWSO EHS Staff



BUREAU OF WATER & SEWER OPERATIONS
ENVIRONMENTAL HEALTH & SAFETY

An EHS Experience with Shaft Maintenance Professionals

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With a simple turn of a faucet, New Yorkers are able to enjoy some of the finest tap water in the world. What many don't realize however, is the amount of teamwork and dedication required to keep the City's water system running. Recently, BWSO EHS staff was given the opportunity to accompany one of the many BWSO teams who have contributed to our long lasting and steady supply of clean and potable water in NYC – the NYC DEP staff of Shaft Maintenance. Currently headed by Chief of Distribution Operations Michael Farnan, P.E., Deputy Chief Michael Sullivan, P.E., Mechanical Engineer Rich Rambrich, P.E. and Superintendent, Jaime Berkeley – the on-going maintenance and development of our NYC 100+ year old shafts are clearly in good hands for years to come.

The responsibility for upkeep and maintenance of one of the city's oldest and most complex engineering projects is no easy task for our colleagues. A combination of managers and trades, including engineers, plumbers, electricians, machinists, watershed maintainers, construction laborers, safety specialists, and administrative staff of Shaft Maintenance, play a huge role in our success as a bureau. Additionally, adept teamwork and efficient collaboration among the Shaft Maintenance crew is what has brought years of success to Shaft Maintenance operations.

"Each employee is a valuable asset to the operation because when a group goes into one shaft and notices something needs to be fixed, they will communicate the problem to the appropriate trade to get the job done," said Dennis McDermott, Supervisor of Plumbers at Shaft Maintenance.

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*Do you know how to prevent this from happening?
See article on page 2.*



"According to the U.S. Department of Labor, Bureau of Labor and Statistics (BLS), injuries occurring from slips, trips, and falls are a leading cause of occupational injuries, especially during the wintertime." – BWSO EHS Staff

The Ultimate Balancing Act – Energy, Economic Development and Protection of our Watershed



Natural gas drilling within the Marcellus Shale has been the topic of a great deal of discussion recently and, because of its relationship to the NYC watershed, it is a topic of discussion that DEP also has a vested interest in. The proposed access to natural gas deposits through horizontal drilling in upstate New York has the potential to directly impact NYC's watershed, known to serve half of New York State's 18 million residents in the five boroughs of NYC and parts of several counties north of the city. Portions of the Marcellus Shale are located beneath or in close proximity to the watershed.

Continued on Page 2



**WIN A FREE MTA METROCARD!
TAKE QUIZ ON PAGE 4**

This map of the US shows that the Marcellus and adjacent Devonian and Utica Shales make up one of the largest shale deposits in the country. Source: Rapid Impact Assessment Report, September 2009

BWSO EHS was able to experience what it is like to be part of the Shaft Maintenance staff by shadowing them on November 15, 2009. The task— to perform a visual inspection at one of the City’s shafts. The EHS reporting team, consisting of Andrea Shivcharan and Julie Bae, were thrilled about having this opportunity, especially since they had never stepped foot inside a shaft before. Once inside, they were taken aback by the awe-inspiring view within. And, who would have ever thought that there is a complex world of operations 200 feet below our City? Continue reading for a play-by-play of the team’s busy day.

- 11:15AM** The EHS reporting team was introduced to the Shaft Maintenance tradesmen on site by Superintendent Jaime Berkeley.
- 11:18AM** The staff monitored the air within the shaft for oxygen, carbon monoxide, combustibles, and hydrogen sulfide. “We do constant air monitoring while we are working here,” said Berkeley.
- 11:19AM** The group entered the shaft through a hatch opening and continued down a single ladder, one at a time.
- 11:20AM** Superintendent Berkeley called Norma Joseph, the administrator at Shaft Maintenance Headquarters in Brooklyn, to let her know that the group was safely down in the shaft. At that time, the group proceeded to sign-in on the visitor’s log.
- 11:23AM** Before entering the elevator, the elevator was sent down to the bottom in order to ensure that the Shaft was not flooded. Since the elevator functioned correctly and showed no signs of water, the group continued.
- 11:24AM** One employee checked the elevator phone to make sure it was working, and then they proceeded 180+ feet down. The elevator could only be operated with a maximum of four individuals inside because of the weight capacity restrictions. At that time, a few of the guys decided to take the stairs!
- 11:25AM** After exiting the elevator, the group entered the lower riser valve chamber, a very cavernous type of space.
- 11:37AM** As the group walked to the lower part of the chamber towards the large diameter lateral piping, they observed the built-in overhead crane, and riser valves from the bottom end of the shaft. “These valves are the biggest in the operation,” claimed William Meyers, Administrative Superintendent for Shaft Maintenance, with regard to the valves under the jurisdiction of the Shaft Maintenance team.
- 11:45AM** Steve Cummings, Machinist, informed the EHS reporting team that there are electrical devices available to assist the staff in operating the valves the reporting team saw. He also explained to them that tunnel pressure is significantly greater than street pressure, so if anything breaks down in the shaft it would “tear up the entire operation.” This particular shaft is connected to City Water Tunnel No. 3, which is currently in stage 1. Stage 2 of City Tunnel No. 3 is expected to come online within the next several years.
- 11:50AM** The EHS reporting team continued to tour the shaft, and intermingle with the Shaft Maintenance employees on board.
- 12:20PM** The group took the elevator back up to the upper level of the shaft, four at a time. Many of the guys took the stairs again!
- 1:25PM** After the tour of the shafts, the EHS reporting team spent the rest of their day at Shaft Maintenance Headquarters learning about the work of the various trades. Continue to page 4 to see pictures of the Shaft Maintenance employees whose job it is to ensure that this vital system is maintained.

The Ultimate Balancing Act – Energy, Economic Development and Protection of our Watershed Continued from Page 1

So, what is the Marcellus Shale?

The Marcellus Shale is a geologic rock formation which lies beneath Ohio, West Virginia, Pennsylvania and New York. According to an article in the December 2009 edition of MIT’s [Technology Review](#), scientists believe the shale formed more than 350 million years ago when mud, containing significant amounts of organic material, settled at the bottom of the shallow sea that covered much of what is now the eastern United States. Today, the shale is a tight geologic formation that contains natural gas deposits. The gas is produced as the organic materials in the sediments break down under the high temperatures and pressure conditions that exist beneath the Earth’s surface. The rock then holds most of the gas in the pore and fracture spaces of the shale. Estimates of the total quantity of recoverable natural gas have varied greatly over the past several years. A recent estimate made in April of 2009 by the United States Department of Energy revealed the Marcellus Shale to contain at least 250 trillion cubic feet (TCF) of recoverable gas.

Why all the interest in the Marcellus Shale?

Access to the natural gas deposits in the Marcellus Shale and the many other shale deposits in the US provides an alternative to oil for both residential and industrial use. It also fosters energy independence and cost effectiveness. Although geologists have long known about the natural gas resources of the Marcellus Shale, the depth and tightness of the shale have made gas exploration and extraction difficult and expensive. Interest has increased significantly due to improvements in drilling technology, proximity to high demand markets for natural gas in the Northeast and the construction of the new Millennium Pipeline through NYS. (Source: NYS DEC). The Millennium Pipeline is a new 182-mile, 30-inch diameter pipeline extending across the southern tier of New York State from Corning to Ramapo, providing natural gas supplies to customers including National Grid, Con Edison, Central Hudson Gas & Electric, and Orange &



This picture shows a typical Drill/Well Pad with associated drilling rigs, storage, treatment, roads and waste management facilities. Source: Rapid Impact Assessment Report September 2009

Rockland Utilities.

How are wells drilled in Marcellus Shale? Horizontal drilling using hydraulic fracturing technology is the most common way to access natural gas from the Marcellus Shale in New York. Wells are already in operation in western New York State and parts of Pennsylvania. The process begins with drilling a well vertically (3000 – 7000 ft down), then curving the well horizontally within the gas-bearing rock formation. These radial areas are then hydraulically fractured to increase the amount of gas that can be recovered. Hydraulic fracturing involves the injection of more than a million gallons of water, sand, and other additives at high pressure down and across into the horizontally drilled wells, which then causes the shale to fracture further. The fissures are held open by the sand mixture which then allows the gas to flow into the well and back to the surface for capture, treatment and distribution via a constructed pipeline.

How would this impact the NYC DEP?

As the Agency charged with supplying the City of New York with a clean and plentiful supply of

drinking water, DEP is committed to protecting the upstate water resources and surrounding watershed. Extraction of natural gas in the Marcellus Shale would likely mean that drilling would occur within the City’s watershed. In a letter written by Acting Commissioner Steven Lawitts to the Commissioner of the NYS Department of Environmental Conservation on September 25, 2009, Commissioner Lawitts detailed a number of DEP concerns regarding the potential impacts that natural gas drilling poses to water quality, available water supply, and critical water supply infrastructure. Some of those concerns include:

- The potential for hydraulic fracturing in the watershed to contaminate ground and surface water supplies;
- The large water withdrawals necessary to support hydraulic fracturing and the substantial impacts that could have on the watershed and the City’s water supply;
- Surface disturbance;
- Chemical and wastewater spills;
- Subsurface failures; and
- Waste disposal.

DEP and the NYC Water Board have engaged the services of a qualified and experienced consultant to conduct drilling Impact Assessment reports. These reports are providing science based research and information to realistically quantify and qualify the breadth of potential impacts from gas drilling in NYC’s watershed.

To date, the NYSDEC has issued a Draft Supplemental Generic Environmental Impact Statement (DSGEIS) and has extended the comment period to December 31, 2009. The DEC also held Public Comment Sessions across the state in October and November of this year.

For more detailed information and updates regarding the details of proposed natural gas drilling in NYS, please see:

<http://www.nyc.gov/html/dep/html/home/home.shtml> and click on the link to Marcellus Shale.

Modifying our Bureau's Equipment – When change isn't necessarily a good thing...

Have you ever been working in the field or performing a task at your facility and had an idea of how you could tweak a tool or machine to make the job easier? Well, if you had those kinds of ideas, then you were likely thinking of what is referred to as an “equipment modification.” Although your idea may seem great in theory, equipment modifications can actually result in serious harm or injury to an employee. For that reason, this month, BWSO EHS is issuing a new SOP entitled [Managing Equipment Modifications](#) that all BWSO employees should familiarize themselves with.

The underlying message here is that modifications should be avoided whenever possible. With that said, there may be situations in which alternatives have been exhausted and a modification is necessary. In such cases, the quality and thoroughness of the review and employee communication and training are very critical. The first step in a thorough review is being able to recognize equipment modifications.

What is an equipment modification?

Equipment that is:

- Modified after receipt (and/or installation) by removing existing parts, moving existing parts, adding parts, changing the basic configuration, settings, or functions in ways that are not identified as acceptable by the Operation & Maintenance Manual, product specifications or the manufacturer;
- Modified by the addition of a completely new fabricated part or attachment;
- Used in a way that is not prescribed by the Manufacturer; or
- Used for a different purpose from that which is recommended by the manufacturer.

For example, something as simple as taking apart an extension ladder and using one section of it as a stand-alone ladder is technically an equipment modification and could place an employee in harms way. The ladder is not intended to be used that way.

Equipment modifications are not recommended!!

Modifications, if not properly evaluated and implemented, are not encouraged for the sole reason that they can result in malfunctions, injuries or worse. Even when a good review process is in place, there may be risks that are not anticipated. When feasible, modifications should be avoided by purchasing new equipment, purchasing manufacturer approved parts or accessories, or revising a work procedure so that a modification is not necessary.

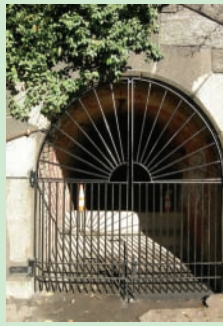
Post-purchase equipment modifications can present unanticipated hazards to employees and the public alike. If a modification is made without the proper review (by the manufacturer, EHS and/or an engineer) or if employees are not properly trained on how to use the modified equipment, the use could result in a myriad of unanticipated accidents. These accidents are usually caused as the result of:

- Inadequate safety and engineering review or approval of the proposed modification;
- Improper use of existing or modified equipment by employees;
- Using equipment in a way not intended by the manufacturer;
- Using incompatible materials; and/or
- Using replacement parts not recommended by the manufacturer.

If you are ever in doubt as to whether something would be considered a modification, you should refer to the BWSO Equipment Modification SOP and/or consult with your EHS Contact or Safety Officer to conduct a preliminary review. If it is determined that a modification is still necessary, fill out Section I of Attachment B of the new Equipment Modification SOP and forward it to EHS for review.

**Questions? Contact Persis Luke,
Director of EHS, BWSO at (718) 595-5266.**

Did you know that our NYC DEP Reservoir Operation's staff recently fabricated a new gate in Central Park?



With more than 20 million visitors a year, New York City's Central Park is a popular city destination. What many visitors do not realize is that there is a world below the lush landscape that is an integral part of the City's water distribution system.

Recently Reservoir Operations employees, Watershed Maintainer Supervisor Steven Brie, Machinists Jimmy Brennan, and Glenn Corwin, and Watershed Maintainers Anthony Napolitano and Michael Corbett, completed an important project which would ensure the security of a portion of the City's distribution system and the public. The project—to fabricate a new gate to replace an older existing side entrance gate built over 100 years ago, located on 85th Street Transverse Road.

The main goal of the project was to ensure that the entrance way into Central Park's gatehouse is safeguarded from the general public and to guarantee that any possible environmental, health and safety hazards are minimized.

It should be noted that this sort of task is routine for this team—“we deal with fabrication on a regular basis at DEP, which is basically when you make things out of metal” said Steven Brie. “The machine shop routinely deals with fabrication of gate guards, screens, chemical pumps or anything mechanical,” he continued. The crew also uses this skill set for other facility upgrades and projects related to EHS, such as fabricating floor plates, gratings for fall protection, stair railings, and ladders for entering and exiting confined spaces. To ensure that fabrications meet all structural and EHS standards and requirements, all work is overseen by Reservoir Operations Engineers.

Preventing Winter Slips, Trips, and Falls

With winter quickly approaching, many New Yorkers may find themselves faced with increased hazards, both at work and at home, due to wet and slippery winter conditions. Regardless of the type of outdoor activity or job task being performed during the winter, there is a probability that a slip, trip, and fall accident can occur if appropriate footwear is not worn and proper walking techniques are not used on a snowy or icy surface.

How serious is the problem?

According to the U.S. Department of Labor, Bureau of Labor and Statistics (BLS), injuries occurring from slips, trips, and falls are a leading cause of occupational injuries, especially during the wintertime. A review of BWSO's occupational injury and illness database revealed that there were 19 incidents reported within the category of slips, trips, and falls between January 1, 2007 and December 1, 2009.

So, what causes a slip, trip, and fall accident to occur?

A slip occurs when there is too little traction or friction between an individual's footwear and the surface the individual is walking on. A trip occurs when an individual's foot strikes an object, and causes the individual to lose balance; the loss of balance may lead to a fall.

What are the contributing factors to winter slips, trips, and falls?

A fresh snowfall may look pretty; however, it can cover up hazards such as uneven walking surfaces, potholes, floor gaps, or icy patches that may cause slips, trips, and falls. When temperatures fall below the freezing mark, snow turns into ice and the ground becomes very slippery. In addition, water from melted snow can turn into black ice, which is typically a thin coating of glazed ice formed on a surface when temperatures remain at or below the freezing mark for a prolonged period of time. Compared to snow or frozen slush, black ice is highly transparent, thus very difficult to see.

What measures should be taken to prevent slips, trips, and falls?

A facility's exterior walking surface should be plowed, shoveled, and/or sanded as often as necessary. When walking outdoors on a snowy or icy surface, you should:

- Be aware of where you are going and pay attention to your walk path.
- Wear footwear with non-skid soles, or cleats (especially when shoveling snow) so that you have better traction on potentially slippery surfaces.
- When entering or exiting a vehicle, hold on to the vehicle for support.
- If possible, park in an area that has already been plowed.
- Walk slowly with your feet slightly pointed outward to maintain balance.
- When going up and down a staircase, hold on to the hand rail.
- Once indoors, wipe the snow from under your footwear to prevent a slipping hazard.
- If for some reason you are falling, avoid using your arms to break the fall.
- If falling backwards, tuck your chin so your head does not hit the ground.
- While falling, twist or roll your body to the side so that you land on your buttocks instead of your back.

First Aid Treatment

If you witness an accident that is due to a fall and the patient needs medical attention, call 911 immediately. Until the ambulance arrives, wrap the patient in warm blankets so the patient doesn't develop hypothermia.

**NYC Department of
Environmental Protection**

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BWSO's Shaft Maintenance Professionals

Bureau of Water & Sewer Operations (BWSO), NYC DEP



Management (Top left): Michael Sullivan, Jaime Berkeley, and William Meyers



Watershed Maintainers (Top right): Dean Salli & Artie Agostino, Construction Laborer: Tony Davila, and Principal Administrative Associate: Norma Joseph



Electricians (Left): Kevin McGarrigle, John Vuzzo, Mayo Boardman, Robert Morena, and Sergey Vedermikov (not pictured).



Machinists (Right): Vasilios Roumbeas, Steven Cummings, Nicholas Paci, Louis Grosso, Surujpaul Rai, and Kazimierz Gorzelski who recently retired (not pictured).



Plumbers (Bottom left): Mike Wong, Wayne Francis, Vincent Hibbert, and Dennis McDermott



Watershed Maintainer and Machinist Helper (Bottom right): Alvin Wells and William Satterfield
Supervisor, Water & Sewer Operations: Mario Genece (not pictured).

Do you have article ideas? E-mail us at BWSOEHS_suggestions@dep.nyc.gov
We look forward to hearing from you soon! – Editors of The Conduit: EHS News for BWSO

TAKE THIS QUIZ: SUBMIT CORRECT ANSWERS FOR A CHANCE TO WIN A FREE METROCARD
BE SURE TO INCLUDE YOUR FULL NAME AND WORK ADDRESS. FAX: (718) 595-5541 AND/OR
EMAIL: BWSOEHS_suggestions@dep.nyc.gov

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| <p>1. Which of the following would be considered a modification according to BWSO's Equipment Modification SOP?</p> <p>A) Building a platform onto a crane runway so that light bulbs can be changed.</p> <p>B) Using a scaffold support as a ladder.</p> <p>C) Sawing off the top 5 inches of a pry bar so that it can fit in small spaces.</p> <p>D) All of the above.</p> | <p>2. EPA defines hydraulic fracturing as:</p> <p>A) The use of water to power machinery or to make electricity.</p> <p>B) Erosion of shorelines due to wave breaks in coastal regions.</p> <p>C) Injection of fluid under pressure to facilitate the production of oil and natural gas.</p> <p>D) A physical therapy technique that uses water pressure to heal broken bones.</p> | <p>3. The DEP's Hot and Cold Weather Guideline recommends all of the following steps for cold conditions EXCEPT:</p> <p>A) Provide regular breaks as needed in extreme cold for shelter.</p> <p>B) Increase your intake of caffeine.</p> <p>C) Monitor use of tools that cause significant hand-transmitted or whole body vibration.</p> <p>D) Work in pairs in isolated areas whenever feasible.</p> |
|--|--|---|

Answers for October 2009 Newsletter Quiz: 1) B 2) D 3) C 4) C

Congratulations to:
Jerome Park Reservoir
& Brooklyn Repairs
for achieving a high level of
EH&S compliance and for their
OUTSTANDING
PERFORMANCE*
at their OEHS EH&S
AUDITS

*Based on a comparison of their two most recent audits resulting in a 50% or more reduction of their total findings.