NYC Environmental Protection
Michael R. Bloomberg, Mayor
Cas Holloway, Commissioner

WEEKLY PIPELINE

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The Invention of the Sunflower That Thrives Without Sunlight

By the time Alfred Craven became a division engineer on the New Croton Aqueduct in 1884 he had already had a rich background in engineering, first as an engineer for the California State Geological Survey in 1871 and then as a tunnel engineer in the Comstock Lode silver mines of Nevada, where prospectors were looking to get rich quick. When Craven finally did move east to work on the New Croton Aqueduct, he brought with him years of practical experience working in dangerous environments, where imprecise calculations could cost workers their lives.

Craven also brought with him a legacy of family members who were well respected engineers. Most notable was his uncle, Alfred Wingate Craven, who served as Chief Engineer of the Croton Aqueduct from 1849-1868. A.W. Craven is best known for laying out much of the sewerage system of Manhattan and for working on the construction of the Central Park Reservoir. He also hosted the founding meeting of the American Society of Civil Engineers (and Architects) in the Croton Aqueduct Department offices on November 5, 1852.

As construction began on the New Croton Aqueduct Tunnel, Craven faced many challenges including an inability to get precise measurements of the cross sections of tunnels in order to estimate the amount of rock removed, and how much lining material was needed. It was clear

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Spotlight on Safety

Injury Incidence Rates: How does DEP stack up?

Last week's Spotlight on Safety talked about injury incidence rates across the United States. The logical follow-up question is: How well is DEP doing? The answer is: Pretty good, but there is always room for improvement! In the first nine months of FY 2011, BWS had 16 injuries during 1,151,979 employee work hours over that same period, which equals an injury incidence rate of 2.8. This injury rate compares very favorably to the "industry" standard of 6.5. DEP has an overall injury rate of 5.5 which is also below the 6.5 standard.

It's important to always remember that our fellow employees are the people behind the statistics. DEP's goal is to make sure that every employee stays safe while at work. This requires constant vigilance and awareness on everyone's part. Keep up the great effort!

To read the full article, please click here.

At DEP, everyone is responsible for safety. If you or anyone on your team is concerned about your working conditions, it's okay to ask your supervisor or your bureau's EHS liaison how they can help. If you've still got questions, you can call the EHS Employee Concerns Hotline. It's DEP's responsibility to acknowledge and fix unsafe situations, procedures, and practices. With your help, we'll not only get the job done, we'll make it safer for ourselves, our coworkers, our families, and our city.

CALL (800) 897-9677 OR SEND A MESSAGE THROUGH PIPELINE. HELP IS ON THE WAY.

Commissioner's Corner

Tonight we are wrapping up the public hearing process for the Fiscal Year 2012 water rate proposal with a final hearing in Queens. This is the last of five public hearings that the Water Board held in every borough to give our 835,000 customers the opportunity to comment on the proposed rate for FY2012, and DEP's performance generally. To recap briefly: DEP's FY2012 proposal is the lowest in six years—thanks in part to each of our bureaus finding ways to deliver great service at a lower cost. The public's response was fairly consistent: the significantly-lower-than-projected rate increase was welcome news, but New Yorkers want us to do even better going forward. I've committed that DEP will work hard to continue cutting costs without sacrificing services, and that we will press Washington, D.C. and Albany to end the cycle of unfunded ca pital mandates that have been the primary driver of rate increases in recent years.

I also urged everyone present to take advantage of the 2% discount we are offering to customers who sign up for paperless billing, and to pay their bill online through direct debit. I stressed these points this last Friday at a joint City Council hearing of the Finance Committee, chaired by Councilman **Domenic Recchia,** and the Community Development Committee, chaired by Councilman **Al Vann.** The hearing was well attended, and I walked the members through what goes into setting the water rate, and how we plan to keep increases as small as possible over the long term.

I'd like to extend special thanks to the BCIA team—Associate Commissioner **Matt Mahoney, Sara Pecker, Chris Villari, Effie Ardizzone, Helene Amato, Lillie Farrell, Karen Ellis, Fred Edmond** and **Paul Park** (from OIT)—who made sure that all of the hearings ran smoothly, and kept me well-hydrated with NYC tap water! I'd also like to acknowledge the hard work of our call center team in customer service, who are in the middle of the busiest time of year due to the water rate setting, and the initiation of the lien sale process. Despite the additional workload, our wait times to pick up calls have dropped from 39 seconds last year to 24 seconds this year on average. To Director **Steve Barry** and the entire Call Center team: keep up the great work!

DEP was also recognized locally and nationally for the groundbreaking NYC Green Infrastructure Plan that will improve harbor water quality—and a lot of other things for New Yorkers throughout the five boroughs. The Gowanus Canal Community Development Corporation, led by Board Chairman Dr. **Jerry Krase** and Executive Director **Bill Appel,** presented us with the Environmental Service Award for our work improving the Gowanus Canal and promoting green infrastructure. Special thanks to Project Manager **Kevin Clarke** for keeping this $140 million project on track. And yesterday, I travelled to Washington, D.C. to accept one of five inaugural U.S. Water Prizes from the Clean Water America Alliance. It was an honor to be recognized among our peers for the groundbreaking work led by Deputy Commissioner **Carter Strickland** and the entire sustainability team. And it was a chance to reiterate our call for EPA and State DEC to treat cities like New York as partners rather than adversaries. The public's interest and appetite for green solutions is tremendous; one quick fact: our Rain Barrel Giveaway Program that ended this past weekend distributed 1,000 barrels. But we already have roughly 2,500 people on the waiting list for the next round!

Focus on the Field

Technological advances replaced the sunflower tool used in the drilling and blasting method for rock and conventional "hand mining" in soil. Starting in 1993, DEP adopted a different tunneling method using a tunnel boring machine (TBM) instead. TBM, also known as a "mole," is a machine used to excavate tunnels with a circular cross section through a variety of soil and rock. Since the diameter of the TBM is fixed, it was easier to estimate the amount of material removed and concrete lining needed. BEDC Construction Accountable Manager **John McCluskey** started his DEP career in City Water Tunnel No. 3 right before the TBM switch, and saw how it could overcome the difficult ground conditions during excavation of the Brooklyn Tunnel.

More recently, John's tunnel work, including equipment installation and finishing of ten shafts, has been a positive experience for him. He coordinates project timelines and budgets and coordinates with multiple contacts including the construction manager, resident engineer, project managers, design staff, field inspectors, utility representatives, city agencies, and community stakeholders. "Through underground construction, I've met some of the best folks who take tremendous pride in what they do and enjoy what they do," explains McCluskey. "Also, the legacy of the work I am doing here will provide an unseen, yet critical function to untold numbers of people in the city for generations to come."

John loves railroads, big and small, whether as an avid model railroader with the Queens County Model Railroad Association, or restoring a working steam locomotive with the Black River and Western Historical Trust. This June marks John's 19th year at DEP, and his first wedding anniversary.

DEP: Then & Now

Then: View looking towards Ashokan screen chamber showing aerator with all nozzles in operation with a flow of 376 million gallons daily.

Now: DEP re-activated the fountain at Ashokan Reservoir and completed work to replace four 48-inch diameter 105-year-old valves that regulate the flow of Ashokan Reservoir water into the Catskill Aqueduct. With the valve replacement complete, the fountain was activated on Mother's Day, May 8, 2011.

Kudos Corner

"CATCH" AND RELEASE: BWSO Staten Island sewer maintenance construction laborers **Joe Amaniera** and **Nick Votto** rescued nine ducklings that fell into a catch basin located at the intersection of Drumgoole Road and Albee Avenue on May 5. The rescued ducklings were reunited with their mother at a nearby pond.

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that a solution was needed since measurements were taken every 10 feet throughout the 30 miles that the tunnel stretched. That solution came in the form of the "Sunflower Instrument," which Craven invented and had manufactured in 1887. Essentially, it consisted of a yellow, wooden disc mounted on a tripod with a rest for a removable measuring pole. The disc is graduated in degrees and the measuring pole is marked with feet and tenths.

In 1895, Craven was placed in charge of the construction of Jerome Park Reservoir but left in 1900 to work with the Rapid Transit Commission, the entity in charge of creating the first subway system in New York City. The sunflower instrument was widely used during construction of subway tunnels, where Craven was in charge of making sure work was being done safely and accurately. He became best known for helping with the development of the Lexington Avenue subway line and the initial subway line for Brooklyn.

Although Craven was no longer working on the water supply, the tool continued to be used and by 1909 the Board of Water Supply put out a bid to have 13 of them custom built. The specifications give precise details including the stipulation that they be made of durable material that can withstand arduous conditions. Despite their durability, damage to the instruments was common and the cost of repairing them became too high. Eventually, the tools became less important as measurements were instead taken from the wooden forms used to support the tunnels during construction. By 1934, during construction of City Water Tunnel No. 2, the tool was only being used to take measurements from tunnels that did not use support frames and broken or missing parts stopped being replaced, until they fell out of use completely. A complete example of the "Sunflower Instrument" survives today in the DEP Archives collection.

You are invited to cast a vote in DEP's **2011 Water Resources Art and Poetry Contest.** Hundreds of wonderful entries were submitted from NYC and watershed students. Please select your favorite entries from the finalists in the six categories. Judging is easy and fun but it ends on Monday, May 16, so cast your vote today.

The 25th annual Water Resources Art & Poetry Contest provides an opportunity for public, independent, charter, parochial, and home-schooled students—grades K-12—to create original art and to compose poetry that reflects an appreciation for NYC's water supply and wastewater treatment systems, and the importance of stewardship. All entries were beautifully executed and revealed a genuine understanding of—and appreciation for—NYC's valuable water resources.

The Queens Museum of Art is pleased to announce the opening of the exhibition, **BFF's …,** designed by Queens Museum of Art artists and teaching staff and inspired by the New York City watershed model on display at the Queens Museum.

BFF's…, will be on display at the Queens Museum of Art, New York City Building, Flushing Meadows Corona Park, through May 16, in the QMA Partnership Gallery.

We welcome your feedback! To submit an announcement or suggestion, please email us at: newsletter@dep.nyc.gov.