

DEP – Capital Infrastructure Management

Sol Posada, P.E. Chief – SEQ Infrastructure Bureau of Water & Sewer Operations (BWSO) March 9, 2021

About NYC DEP



WATER SUPPLY

- Deliver 1.1 billion gallons of water to 9.6 million New Yorkers every day
- Protect our 2,000 square mile watershed, including 19 reservoirs and three controlled lakes

WASTEWATER TREATMENT

- Treat 1.3 billion gallons of wastewater each day
- Operate and maintain 14 plants, 96 pumping stations



 Update and enforce the Air Code to reduce local emissions, and regulate hazardous waste and noise pollution







About NYC DEP





Water Supply





Responsibilities:

- three surface water sources (the Croton, the Catskill, and the Delaware)
- upstate water collection systems include 19 reservoirs and three controlled lakes with a total storage capacity of approximately 570 billion gallons
- The system supplies drinking water to almost half the population of the State of New York – over eight million people in NYC and one million people in Westchester, Putnam, Orange, and Ulster Counties

Wastewater Treatment



Wards Island WTP

Wastewater Treatment



Responsibilities:

- Responsible for the operation and maintenance of all facilities related to the treatment of sewage:
- 14 Wastewater Resource Recovery Facilities (WRRF), eight of which have sludge dewatering facilities
- four CSO retention facilities,
- 96 pumping stations,
- 490 sewer regulators,
- 553 tide gates,
- six wastewater laboratories, one microbiology lab,
- 12 harbor vessels



Sewer and Water Operations





Responsibilities:

- Distribute pure drinking water to the City and collect wastewater & storm water
- Repair & maintain DEP Infrastructure:
 - 140,000 catch basins
 - 114,000 fire hydrants
 - 90,000 valves
 - 14 gatehouses
 - 3 reservoirs
 - 68 groundwater wells
 - 100 million gallon storage tank
- Plan capital upgrades to the water & sewer network as well as the Bluebelts on Staten Island
- Review and permit connections into the water & sewer system



BWSO allocates funds to address areas in need of focus that will help address and rectify concerns throughout the city of New York

Priorities
1. Emergency repairs
2. Water main replacement
3. Sewer replacement
4. Upgrade facilities and tunnels
5. Southeast Queens
6. Mid Island Bluebelt

Emergency Repairs





South Ozone Park Sewer Collapse Response



First 48 Hours:

- NYC Response Team established (DEP, NYCEM, ARC, DOHMH, and others)
- DEP and NYCEM Command Buses mobilized
- DEP began pumping basements of affected homes
- Multiple rounds of canvassing began
- First Community Meeting Held on December 1st
- Reception Center first established at P.S. 223

Recovery Operation:

- Reception Center mobilized through December 20th
- NotifyNYC Text System Created, multiple informational flyers
- Hotel rooms set up for impacted residents
- NYCEM procured emergency contracts to clean all affected homes; a total of 85 were cleaned
- DEP procured an emergency contract for heat and hot water
 - \circ 29 boilers and furnaces replaced
 - o 31 hot water heaters replaced
- Second Community Meeting held December 8th
- City Council Hearing held December 11th





Water Main Replacement



- In order to ensure that New Yorkers have the world's most robust, secure, resilient water supply possible, DEP invests in fixing and replacing critical infrastructure and improving operational efficiency
- The average age of a NYC water main is 66 years old
- About 1/3 of the system (2300 miles) is over 100 years old, which has exceeded its expected useful life
- 90% of water main breaks over the past 10 years are on water mains installed prior to 1970

Wood main being examined after excavation



Water Main Replacement



 On January 30, 2020, Mayor de Blasio announced increases in investments to the City's water delivery system in order to reduce water main breaks throughout New York City.



De Blasio Administration Increases Investments in Water Delivery System Infrastructure

City now investing \$800 million on new water mains over next two years, a \$130 million increase

Sewer Replacement

- Environmental Protection
- To operate at optimal performance and ensure most cost-effective public investments to keep our system in a state of good repair.
- The average age of a NYC sewer is 69 years old.
- About 30% of the system is over 100 years old, which has exceeded its expected useful life.
- BWSO focuses on sewer replacement to upgrade aging infrastructure



High Level Storm Sewers (HLSS)





Gowanus HLSS Projects sewer replacement



Project

Fiscal Year

Cost

Construction Start date

Construction Completion • November 22nd 2018 Date

• SEK20065

- FY16
- \$26.9M
- March 28th 2016

- SEK20067 •
- **FY18** •
- \$26.1M
- October 1st 2018 •
- September 29th 2021



Sewer Back-ups

Environment Protection

Fats, oils, and grease found in food ingredients such as meat, cooking oil, shortening, butter, margarine, baked goods, sauces, and dairy products are the number one cause of sewer backups in New York City.





Grease Buildup Before Cleaning **After Cleaning**

Reduction of Sewer Back-ups

- Over the last decade, DEP's fourteen wastewater treatment plants received a significant increase of non-biodegradable waste: plastics-containing toilet wipes
- Many of these products do not break down in water, and cause damage to screens, motors, pumps and other equipment.
- DEP launched a grease campaign to educate the public and reduce the improper disposal of "flushable" wipes and grease





Upgrade Facilities



To ensure the operations of key infrastructure assets, DEP identifies operational needs and establishes priorities for improvements, rehabilitation and upgrades.

In-City Dams Rehabilitation



New Clove Pump Station Electrical Upgrade



288 Clove: Reconstruction of Field Operations Facility



Upgrade Tunnels





- City Tunnel No. 1
 - In service from 1917
 - 18 miles long
- City Tunnel No. 2
 - In service from 1936
 - 20 miles long
- City Tunnel No. 3
- Stage 1
 - In service from 1998
 - 13 Miles long
- Stage 2 Manhattan
 - In service from 2013
 - 9 Miles long
- Stage 2 Queens/ Brooklyn
 - Activation Ready
 - 11 Miles long

Southeast Queens





Southeast Queens



In 2015, Mayor de Blasio announced an unprecedented investment of \$1.5 billion over ten years to expand the sewer network in Southeast Queens and resolve many long-standing flooding concerns.

Key Queens Sewer Facts:

- 2,759 miles of sewer systems

 1,019 miles of sanitary sewers
 - 797 miles of storm sewers
 - 943 miles of combined sewers
- Approximately 417 miles built to newer design of 1.75 inch/hour of rainfall
- Large areas of Queens still lack storm sewers
- Southeast Queens experiences chronic flooding due to topography, lack of storm sewers.



Southeast Queens Flooding













Southeast Queens- SE823

- First Southeast Queens trunk spine project to increase storm sewer carrying capacity
- Construction started September 2018
- Box sewer installation began October 2019. Construction completion is expected in Summer 2021
- 2,500 LF storm trunk sewer
- 3,700 LF combined trunk sewer
- Construction cost: \$72.7M





Southeast Queens – SE848

- Southeast Queens neighborhood sewer project in Jamaica
- Construction started in April 2018 and is scheduled to be complete in Summer 2021
- Construction cost: \$55.7M
- This project will resolve 17 flooding complaints in two priority grids



Mid Island Bluebelt



- Bluebelts are ecologically rich and cost-effective drainage systems that naturally handle the runoff precipitation that falls on our streets and sidewalks
- Bluebelt preserves natural drainage corridors including streams, ponds, and wetlands, and enhances them to perform their functions of conveying, storing, and filtering runoff precipitation or stormwater
- In addition to being an excellent mechanism for reducing urban flooding and improving the health of local waterways, Bluebelts also provide open green space for their communities and diverse habitat for wildlife since they are not constricted by closed pipes or underground infrastructure like traditional storm sewers.



Springfield Bluebelt





Mid Island Bluebelt New Creek – Under Construction



- Contract Cost: \$24,982,895
- Anticipated Completion: 10/15/2021
- Extended Detention Wetland (NC-11) & Outlet Stilling Basin (NC-12)





New Creek 16 – Under Construction

Environmental Protection

- Contract Cost: \$33,500,000
- Anticipated Completion: 11/30/2022





MIBBNC05 – Hylan Blvd. – NC-13 & 14

- Estimated Cost: \$32.7 million
- Anticipated Completion: Spring 2022
- Extended detention wetland





Environmenta

SER200285 – Todt Hill Rd. – NC-4



- Estimated Cost: \$5.6 million
- Anticipated Completion: 2024
- Double detention pond





MIBBNC04A – NC-6



- NC-6
- Estimated Cost: \$31.5 million
- Anticipated
 Completion: 2024
- Extended detention wetland



nyc.gov/dep