Sewer Works

Newsletter of the Hull Sewer Department
Summer 2023

Operations Message

While we try hard to avoid disruptions in sewer service, sometimes the unexpected happens. That is just what happened, in late June/early July, when we experienced a broken sewer pipe on Nantasket Avenue at Edgewater Road. The first indication of a problem was a nearby homeowner calling to inform us of a back-up in their basement. After verifying that the downstream sewer was not flowing, it was apparent that the connection at the manhole on Nantasket Avenue had collapsed and was restricting flow. We mobilized Aqua Line Utilities, Inc., of Weymouth, who set up a temporary flow bypass to maintain sewer flows and to divert the flow so the repair could be made. What appeared to be a relatively straightforward repair turned into a much larger project involving extensive traffic management, many utility crossings including two electrical ducts, water, gas, telephone, fiber optic cable, and drainage piping. Some of these utilities were not previously known to exist and were not pre-marked. To complicate the work, there was also high groundwater conditions and loose sands (somewhat like digging at the beach) which required steel trench boxes, steel plates, timber sheeting, and dewatering pumps. This was difficult work that ended up being a full replacement of the sewer line since it kept falling apart as we dug. The work is now complete.

While we have recently been focusing on needed upgrades to the treatment facility, this event has shown that we still need to pay attention to the collection system. We will be looking at other areas in Town with the same type of pipe and updating the assessment that was done about four years ago. This will be the responsibility of our new Assistant Director, Tom Molinari, who started in early August, replacing Brian Kiely, who left to work in the private sector.

**A reminder to residents to please call the Sewer Department if you have a back-up in your home. Our staff will check the sewer line in the street first to see if that is where the back-up is originating from. If the street is flowing properly, you will be notified and you will need to contact a plumber to further investigate from inside the property.

John Struzziery, P.E., Director of Wastewater Operations
Thomas Molinari, Asst. Director of Wastewater Operations
Mike McDonough, Facility Coordinator
Cathy Joaquim, Finance and Administrative Coordinator

Capital Improvements

Our focus of the past several years has been to address the aging infrastructure in the largest sewers and at the treatment facility. It is an extensive and expensive undertaking. Nothing shows the aging of the system more than the sewer line collapse at the corner of Nantasket Avenue and Edgewater Road on June 28th. Our repairs and replacements are prioritized by need and always consider the three R's: Reliability, Resiliency and Redundancy.

Collapsed pipe restricting flow by more than 50%

Sewer pipe replacement across Nantasket Avenue

Contact Information: **Email:** sewer@town.hull.ma.us **Telephone: 781.925.1207**

Grants Update:

- **FEMA Coastal Resiliency Berm:** We are progressing through the grant approval process with FEMA with the expectation of receiving the grant in early 2024, if approved. This $4M project would create a vegetative perimeter berm and a concrete wall around the wastewater facility providing protection from coastal flooding.
- **FEMA Electrical Retrofit:** This $414,000 project, funded by a FEMA grant, is part of our Influent and Control Building Upgrades project currently underway at the wastewater facility. This grant provides for the relocation of the essential electrical and control equipment to the second floor in further protection from any flooding concerns.
- **Pump Station 9 at Pemberton Point:** We were granted $2M in Congressionally Directed Spending. After including grant conditions and final review by EPA, the grant administrating authority, we are planning on bidding the project in Fall 2023. Construction is expected to take one and a half (1 ½) years.
- **Gap III Energy Grant:** The Massachusetts Department of Energy Resources has awarded us a grant of $90,000 to replace influent piping, valves, and pumps which would increase capacity and efficiency, reducing our energy use by 20 megawatt-hours per year. This work is being done under the Influent Upgrade Project currently under construction.
- **Ocean Outfall Rehabilitation Project:** This project will make needed repairs to the outfall pipeline. We are working through the ARPA approval process, who is funding this $900,000 project. We expect to bid the project late summer 2023 and perform the construction by early spring 2024.
- **Sewer Inspections:** The Sewer Department inspects sewers as part of our ongoing maintenance. We are preparing to submit a grant application in August to the DEP for a pilot program which would provide sewer lateral inspections throughout Hull. These inspections would provide information on the state of the sewers and if they are in need of repair.

Sewerology:

This quarter, we describe the type of pipes used in our sewer system. Most pipes that make up the sewer system flow by gravity and are made of materials generally available at the time they were installed. A listing of the different types is indicated below:

BR-Brick: Brick pipes, dating to 1869, are in the Pemberton section, along Main Street; and, surprisingly, are still in excellent condition.

VC-Vitrified Clay: Most of our pipes, particularly on the hills, are made of clay. It is generally a good pipe and holds up well, if installed correctly. However, it is very brittle and subject to cracks, breaks, defects, and leakage.

AC-Asbestos Cement: AC pipe was used in the 1970's and early 1980's as a cost-effective alternative to clay pipes. However, the cement is vulnerable to hydrogen sulfide deterioration within the system, and this is what makes it a concern. It is also a brittle pipe and, when combined with sulfide deterioration, the pipe collapses as we recently experienced. AC pipe is also used as a pressure pipe in force mains. In 2006, we used a polyester resin liner to stabilize and protect the pipe since it showed severe deterioration.

DI-Ductile Iron: DI is used in shallow cover situations where the stronger pipe can support traffic loadings better than most other pipes. It is also used extensively in pressure pipe applications and force mains since it has relatively water tight joints and can take high pressures. It is used in most areas of the treatment facility process piping and, as we upgrade, it is being replaced with HDPE or PVC pipes.

RC-Reinforced Concrete: RC is used for the largest pipe in our system, the Interceptor Sewer. Over the years, the Interceptor showed extensive deterioration because of hydrogen sulfide gas within the system. This was the reason we completed the lining of the entire length of Interceptor in 2019/2020.

PVC-Polyvinyl Chloride: Since the late 1980's through today, PVC is the most common material for sewer systems, due primarily to its light weight, corrosion resistance, watertightness, and low cost. Most of the newer sewers in Hull such as in the Alphabet Street area, are made of PVC.

HDPE-High Density Polyethylene: HDPE is primarily used in specialty applications, such as our ocean outfall and other piping, for corrosion resistance, water tightness, and long lengths.

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