

# Sewer Works

## Newsletter of the Hull Sewer Department Summer 2021

### Operations Message

As we begin the summer season and enjoy life without the COVID-19 restrictions that were in place over the past year, we certainly can't forget our experiences and hope there is no resurgence. COVID had serious impacts for many of us and unfortunately, the Sewer Department, like many others, is seeing continuing affects by way of higher construction pricing, labor shortages, trucking delays and longer lead times for many materials or parts. As an example, we recently bid the HVAC project and only two bidders submitted bids, approximately \$1.1M and \$2.0M, respectively, over the budgeted amount. This places a tremendous burden on all of us and we are looking into reasons for the higher pricing. Due to the combination of factors noted above, we may not award this project now but re-bid later in the year, in hopes of more competitive bids. Grant funding for the electrical retrofit project will also be requested to be extended.

While we functioned and will continue to function throughout the entire pandemic, we also are taking steps as noted below in conducting COVID testing in wastewater. Although we tried getting involved earlier last year, due to the demand, we were not successful. The service is now provided at no cost through CDC and the Department of Health & Human Services and allows for one test sample location in Hull at the treatment facility, two days per week. This sampling will provide trending over time if there are traces of the coronavirus in the wastewater.

Perhaps the most important aspect of interest that will affect us all is implementation of the next sewer user rate increase effective with this billing. As part of the capital improvement plan approved at the 2018 Annual Town Meeting, an annual 7.5 percent rate increase was planned each year for several years.

To date, we have been successful in securing grants in the amount of \$1.15M and low interest loans in the amount of \$10M to help defray the costs of our capital projects. We continue to seek opportunities for funding to help lessen the impact on our sewer bills. Work is getting done and improvements are being recognized. Thank you for your continued support.

**John J. Struzziery, P.E., Director of Wastewater Operations**

#### Grants Update:

- **CZM Coastal Resiliency Design:** The CZM-funded design of our vegetative berm to protect the WWTF from coastal storm flooding is now complete. We are now looking for additional opportunities to fund the construction of this project.
- **FEMA:** Design is underway on our electrical retrofit project funded by a FEMA grant in the amount of \$414,000. The project will relocate essential electrical components to the second floor of the treatment facility to maintain treatment system functionality during a major storm event.

**Projects Update:** We are advancing projects at the treatment facility and pump stations while also supporting the Town's roadway improvements program by inspecting, repairing or upgrading sewers within roadways to be repaved. Several projects are in progress at various stages of planning, design, or construction (next page):

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#### Retirement News

Terri Berardinelli, the Sewer Department Facilities Coordinator, will retire in mid-July after 19 years of service for the Town and 6 of those years with the Sewer Department. Terri has been an important part of our team managing the day to day activities, billing, and coordinating Dig-safes among many other responsibilities. Thank you Terri and enjoy!!

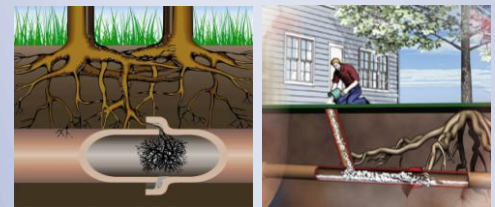
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#### Sewer Rate Increase

As a reminder this quarter's bill includes the rate increase of 7.5% to \$16.18 per 100 CF that was approved at Town Meeting.

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#### Be aware of roots in the sewer!



This time of year is the growing season for trees and shrubs, and their roots go looking for new water sources. They frequently grow into older sewers through cracks or pipe joints. If you experience a back up, and a drain cleaner identifies roots as the problem, most drain cleaners can use a root cutting tool to remove them temporarily. You may also want to apply a root killer foam available at big box stores. However both of these treatments will be recurring maintenance items.

The permanent solutions to this problem are more expensive - to have a contractor either replace your older sewer service pipe with a new PVC pipe, or to line the pipe. Try to avoid this problem entirely by not planting shrubs or trees over your sewer service, but know that some roots can grow surprisingly long distances in search of hydration!

- **Planning**

- WWTF Ocean Outfall Resiliency to protect outfall diffusers
- Many upgrades recommended in our Facilities and Resiliency Plan including UV Disinfection and Solids Handling

- **Design**

- Pump Station 9 replacement at Pemberton Point – see below for concept rendering



View from Main Street driving east from Hull High School



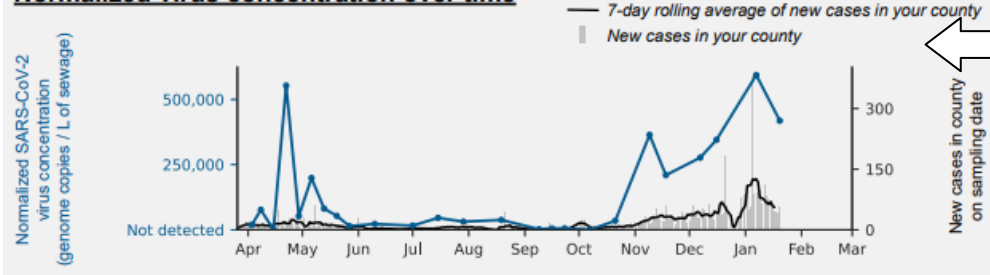
3D Rendering of new pump station

- **Construction**

- HVAC Upgrades Project at the treatment facility was bid and is currently on hold due to bids over budgeted estimate
- Point Allerton Avenue sewer repairs to prepare for roadway paving
- Effluent Pump Station and Pump Station 5 (Draper Avenue) construction is now complete, work at Pump Station 4 (Marginal Rd) added to the project and is ongoing

**COVID-19 Wastewater Surveillance:** We began participating in a program sponsored by the U.S. Department of Health and Human Services (HHS), at no cost to us, to test and monitor our wastewater for traces of COVID-19 genetic material. We are excited to help HHS and Biobot Analytics, a Cambridge-based startup co-founded by PhD students at MIT, develop this technology. Wastewater can be analyzed to identify levels of COVID-19, and genes can be sequenced to identify variants in the community. Beyond COVID, this technology can be expanded to monitor seasonal influenza outbreaks, detect novel viral pathogens and antibiotic resistance, and opioid use. We expect to have interesting data to report in our next newsletter as this 12-week program concludes.

#### Normalized virus concentration over time



This chart is an example from South Hadley, MA, who was an early participant in the HHS/Biobot COVID wastewater surveillance program. The blue line shows their sampled virus concentration overlaid on the county-wide official new cases per day.

Wastewater surveillance may provide early detection of outbreaks and may detect asymptomatic occurrence.

**Sewerology:** This edition of Sewerology will attempt to simplify an approach of Wastewater Epidemiology, which will help in understanding our COVID surveillance program. Our samples are analyzed to identify COVID genetic material (not necessarily live coronavirus) which is shed from humans through their digestive track and feces. To account for dilution, the samples also identify a vegetable virus common in peppers called PMMoV, also commonly excreted in stool.

- Raw viral concentration (genome copies per liter of sewage): the raw SARS-CoV-2 viral concentration is directly measured by the lab assay.
- Normalized viral concentration: the SARS-CoV-2 viral concentration is normalized to the PMMoV fecal indicator, to account for dilution due to wastewater from sources other than feces (showers, laundry, cooking, infiltration and inflow, etc.)

This is how the analysis is able to reliably detect the virus (>99%) at a level of 1 infected person per 6,500 people. Dilution does not affect the results even when we have high flows due to rain and coastal storm flooding.