The city’s water protection division is collaborating with the Missouri Department of Health and Senior Services (DHSS), Department of Natural Resources and researchers at the University of Missouri – Columbia on a statewide sewershed surveillance project to test for genetic markers of SARS-CoV-2, the virus which causes COVID-19. This project is being funded by a Centers for Disease Control and Prevention, Epidemiology and Laboratory Capacity grant through the DHSS. Several studies around the world have found a correlation between the amount of viral material present in sewage and the number of reported cases within a given sewershed, the area which drains into a community’s wastewater collection system.

The virus causing COVID-19 in humans is newly discovered, but using wastewater for tracking diseases is not a new technique. In the past, wastewater testing has proven useful in tracking diseases, like polio and norovirus, and could be a valuable tool for SARS-CoV-2 surveillance. Humans shed SARS-CoV-2 through excrement and it can be detected in wastewater by testing for specific genetic markers.

It is important to note wastewater is not a significant transmission pathway for the virus. Many treatment techniques used in wastewater treatment facilities destroy the virus, preventing it from spreading through Missouri’s waterways. These wastewater samples are collected from the head works of the plant where wastewater enters the facility from the collection system, before any treatment has occurred.

The sewer surveillance samples are collected each Wednesday morning. A portable sampler is set up at the head works each Tuesday morning to collect a 24-hour composite sample of water protection influent wastewater. A sample technician collects the sample, mixes it and pours off three separate 50 mL samples. These 50 mL sample tubes are labeled, placed in a plastic bag and then placed inside another plastic bag with a biohazard sticker affixed to the outer bag. The samples are then placed in a cooler with ice packs for preservation during shipping. The cooler is taken to the health department to be shipped to the Life Sciences Center at the University of Missouri for testing.

This sewage surveillance project could be a proactive and cost effective way to help inform public health strategy and mitigate the spread of COVID-19. This testing has the potential to provide population level information about the presence of COVID-19 not found through patient testing, but present in a community. People can be infected for up to 14 days before showing symptoms of COVID-19, and some never develop symptoms. These carriers may get tested too late, if at all. This wastewater testing may be able to provide early awareness for local public health agencies and assist in directing testing and other resources that help protect public health. The main goals of the project are to use the data generated from sewage testing to understand the distribution of SARS-CoV-2 in Missouri and use long-term trends to inform mitigation efforts in areas which may be seeing an increase in spread.