



*The latest updates on the Waterway Protection Tunnel, a key part of MSD's plan to capture and treat 98 percent of the combined sewer overflow volume by 2020.*

## FROM THE PROJECT MANAGER



The path to constructing a tunnel isn't necessarily a straight one. While it might seem a matter of going from Point A to Point B, it takes a lot of work to get to Point A. Case in point: construction of the Waterway Protection Tunnel.

To build the tunnel, we have to go deep — 200 or more feet deep. That means creating both a pump station shaft and working shaft, which are essentially deep entry points into the ground that allow access for equipment and workers. These shafts are so large that a 1,000-sq-foot single-story ranch house could fit into them! To dig to a depth of 200 feet, more than just shovels are required.

Workers excavate through 50 feet of soil to get to the rock surface, then use explosive charges to blast away rock, alternating between the two shafts with two blasts per shaft each week. The blasts, which create about 10 feet of depth, are muffled using sand, rubber mats and a special shaft cover, allowing the blasts to produce less noise and vibration than normal vehicular traffic. The shafts are then excavated, and the process repeats.

By late July, excavation of the rock within the shafts will have reached tunnel depth. Then, the horizontal work begins as the starter tunnel will be excavated to connect the two shafts through additional blasting and drilling. This will allow for the assembling of the boring machine below ground which will be used to create the actual Waterway Protection Tunnel.

The 2.5-mile tunnel will capture 22 combined sewer overflow points that now discharge 351 million gallons of mixtures of sewage and rainwater in a typical rainfall year that flow into the South Fork of Beargrass Creek and the Ohio River. The tunnel will capture 98 percent of these overflows and store the mixtures until the rain subsides and sewer system capacity is available.

## HOW CORE SAMPLES REVEAL THE EARTH'S HISTORY

Did you know that with a major construction project like the Waterway Protection Tunnel, it's not just engineers at work, but geologists too? Before construction began on the tunnel, a series of rock core borings were drilled along the proposed tunnel alignment to collect rock core samples. These samples help give geologists and engineers a better understanding of the physical characteristics of the bedrock in the project area.

Fossilized remains of sea creatures that once existed when the present-day Louisville area was located south of the equator 500 million years ago were found in the samples, including horn corals, clam-like brachiopods, and rugose coral. They are being stored in a rock core library, where engineers may inspect them during the course of the tunnel construction project.

Select sections of the rock core underwent testing and analysis at the Earth Mechanics Institute, located at the Colorado School of Mines, in Golden, Colorado. At the



Black & Veatch Engineering geologist Todd Tharpe examines core samples from the tunnel area underground.



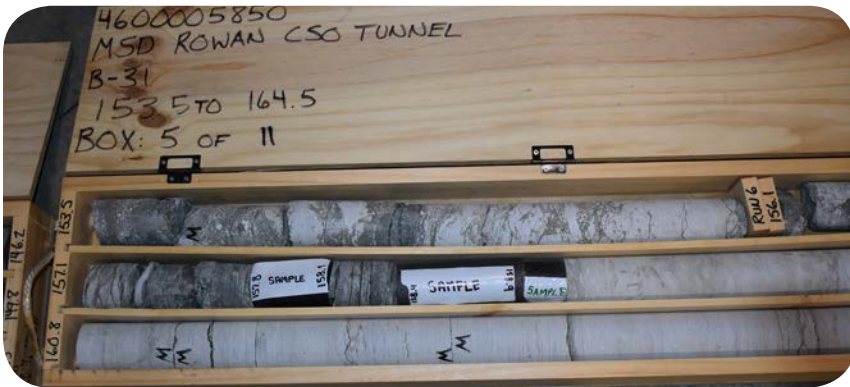
Nighttime view from the tunnel shaft looking up.



laboratory, the engineering properties of the bedrock samples were determined. This data, as well as other geotechnical data that was collected and analyzed locally, was then used in the tunnel design.

Once the construction of the Waterway Protection Tunnel is completed, the core samples likely will be shown in local science museums. Some of the samples may be donated to the Kentucky Geological Survey's Well Sample and Core Library.

Many of the fossils found in the core samples are similar to those seen at the fossil beds at the Falls of the Ohio State Park just across the river in Clarksville, Indiana, which is open to the public seven days per week.



## ROAD CLOSURE UPDATES

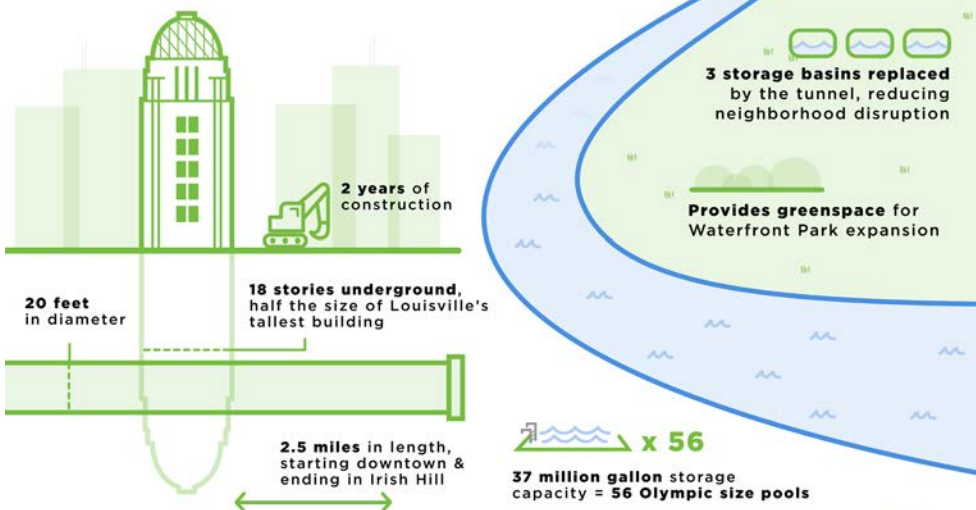
### LEXINGTON ROAD AND BAXTER AVENUE INTERSECTION

Work continues on this intersection and completion of the work is expected to be no later than August 7. MSD is installing a large sewer main for the tunnel project in this location.

To learn more about the Waterway Protection Tunnel visit [LouisvilleMSD.org/tunnel](http://LouisvilleMSD.org/tunnel).



will prevent **351 million gallons** of sewage and rainwater from combining and entering local waterways in a typical year.



The Waterway Protection Tunnel is a key part of MSD's plan to capture and treat 98% of the combined sewer overflow volume by **2020**.



## DID YOU KNOW?

The longest tunnel in the world is the Delaware Aqueduct in New York. Constructed from 1937 to 1953, it's 85 miles long and is part of the system that supplies water to NYC from the Delaware River near its source and from other streams in the Catskill Mountains.