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City continuously monitoring rivers, karst watersheds

By CAROLINE EGGERS ceggers@bgdailynews.com Jul 19, 2019



Geologist and city environmental technician Nick Lawhon (left) and Western Kentucky University graduate student J.T. Troxell take water samples Wednesday, July 17, 2019 at Lost River Rise near Lampkin Park.

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Just off U.S. 31-W By-Pass, two young scientists climb across jagged rocks into what has been dubbed “Bypass Cave.”

Nick Lawhon, an environmental scientist for the city of Bowling Green, more or less crawls just far enough to reach a small pool of cool water.

He's followed by J.T. Troxell, a Western Kentucky University graduate student and city intern, who's lugging a bag of clear vials labeled with hydrochloric acid, sulfuric acid and other chemical compounds.

Troxell measures the water temperature, pH and dissolved oxygen levels, and records observations on the water's odor, turbidity and visible litter – while Lawhon carefully fills the vials.

Four times annually, Bowling Green's Public Works Department conducts two excursions to rivers, creeks and karst watershed features within the city limits to collect water samples and tests for common pollutants and bacteria, such as E. Coli and atrazine.

“Without an established baseline for water quality and quantity, it is difficult to identify and assess impacts to the ground and surface water systems of the area,” Lawhon said. “We have to have a baseline to compare incidents so we can quantify the extent of the impact.”

On Wednesday, the men sampled at two cave entrances, a spring, a blue hole at Lost River Cave, a well drilled into a cave and a karst window, which is a collapsed sinkhole with a stream running through it.

The process was delicate. Since some vials had toxic substances at the bottom – to test for fecal chloroform, one vial had sodium bicarbonate on the bottom to cancel out any potential chlorine – they had to use separate containers to scoop up water and fill the vials.

But it also seemed almost automatic for them.

Lawhon, who officially joined the city six months ago, has been collecting water samples since his undergraduate days at Western Kentucky University.

“I've sampled off and on for the past 10 years,” he said. “The sampling itself becomes routine,” but environmental factors change like cave collapses and flood levels occasionally present challenges.



Though an intern, Troxell operated like a seasoned scientist. He was introduced to a “new world” when he decided to study environmental and sustainability sciences as an undergrad at WKU.

“I kind of stumbled into this department,” Troxell said. “I’ve always been outdoorsy. Then I just kept doing it.”

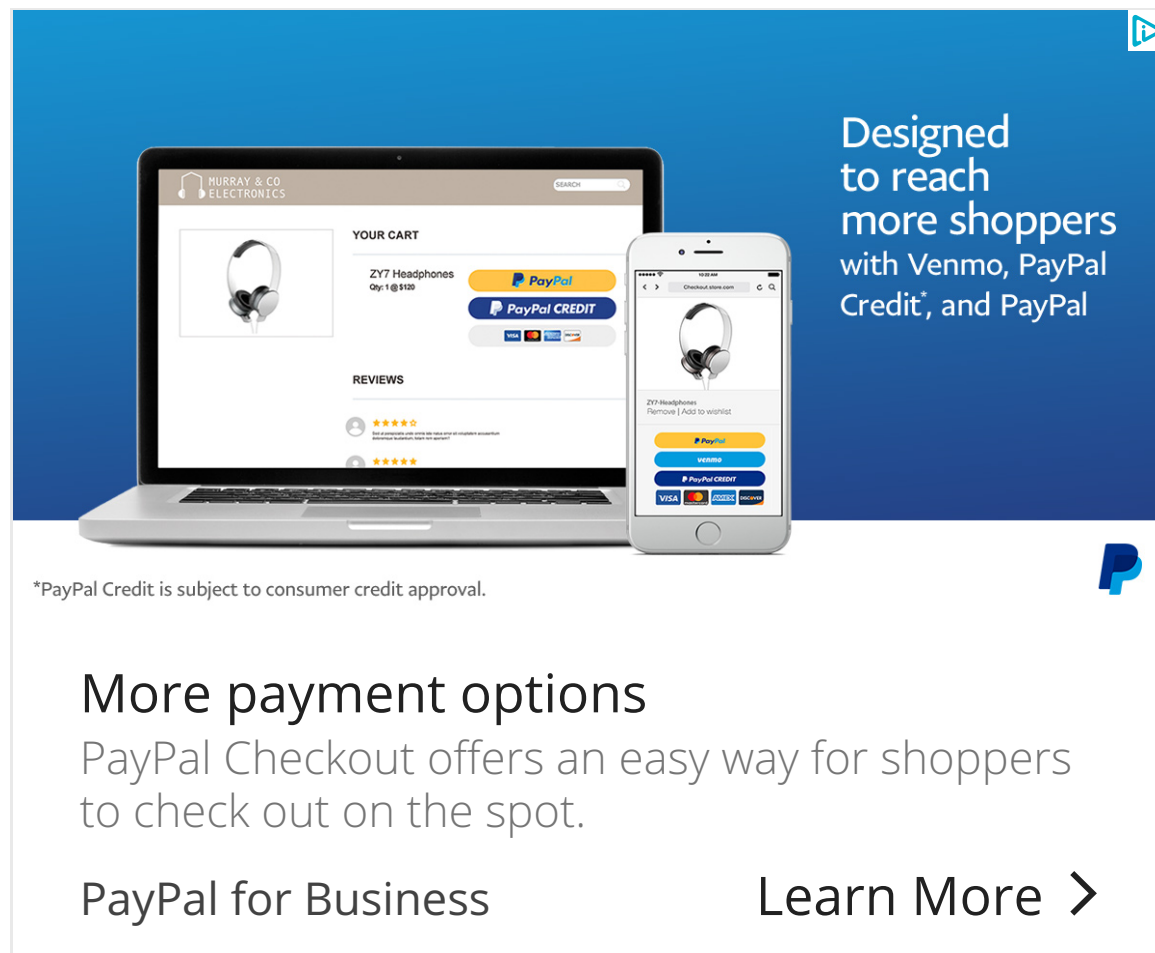
But he’s learned the practical side of helping monitor and maintain a healthy city as a graduate student – focusing on the geoscience of karsts and studying features like sinkholes.

The advertisement features a photograph of a living room with a white sofa, a dark wood coffee table, and a rocking chair. In the top left corner of the photo is a small sign that says "England". Below the photo is the Ford's Furniture logo, which includes the text "SINCE 1936", "FORD'S FURNITURE", and "Furniture You Know, People You Trust!". Below the logo is a red button that says "VIEW MORE". To the right of the logo is a large red and black circular graphic that says "CUSTOM SOFA DELIVERED IN 30 DAYS" and "\$599".

“I’ve learned more in the past year than in my four years of undergrad,” Troxell said.

“Now that I’m actually using it, I remember it.”

Troxell has also helped the city improve the water sampling process. He persuaded the city to ditch note-taking on paper, and created a Dropbox spread so the city could digitally document each excursion.



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“J.T. has really streamlined a lot of processes since he’s been here,” Lawhon said. “It helps to have a rotation of young people. Interns not only learn, they teach people who have been doing things for a long time.”

The day before, Bowling Green environmental manager Matt Powell motored through the Barren River and Drakes Creek with a cooler full of vials and an extra set of intern hands to collect another set of samples from several sites.

“We try to do the exact same place at the same time,” Powell said.

After finishing collections, the two teams had to immediately drive to WKU’s HydroAnalytical Lab on Nashville Road, as some samples have to be tested within six hours of being pulled out of the water.

“We’re not usually surprised by the results,” Powell said.

It generally takes eight to 10 days to receive the readings from the lab.

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