

March 14, 2019
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Louisville Zoo
1100 Trevilian Way - Louisville, KY 40213
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Zoo Reopens

LOUISVILLE, Ky., March 14, 2019 - The Louisville Zoo is set to resume normal operations Friday, March 15 following the subsidence event that occurred on March 6, 2019.

The Zoo closed voluntarily out of an abundance of caution immediately following the ground subsidence that occurred in an undeveloped and unoccupied area of the Zoo just above an undeveloped and unoccupied section of the Louisville Mega Cavern in the early morning hours on March 6, 2019.

The subsidence event affected a specific isolated area of the Zoo, which represents less than 1% of the Zoo's property. The perimeter of the subsidence is well defined. The remainder of the Zoo does not appear to be adversely impacted by this singular subsidence event.

A visual assessment of the Louisville Mega Cavern under the Zoo and a surface visual assessment in the area of subsidence and adjacent areas were performed by consulting engineers. Aerial and foot reconnaissance were performed by Zoo personnel. A copy of the memorandum from Wood Environmental & Infrastructure Solutions is attached for your review.

A physical barrier is being erected on the ground surface of the Zoo, 40 feet from the perimeter (no-access area) of the subsidence area on the west, north and east sides and extending to the Zoo's property line on the south side. The subsidence area will be secured with guards until the subsidence perimeter fence completion this week. The barrier will stay in place until a permanent solution has been implemented.

The Zoo's primary concern in the first phase was to dedicate resources to establish safety. Subsequent phases will explore causation and determine next steps for the subsidence.

Zoo hours are 10 a.m. to 5 p.m. (enjoy until 6 p.m.).

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The Louisville Zoo, a non-profit organization and state zoo of Kentucky, is dedicated to bettering the bond between people and our planet by providing excellent care for animals, a great experience for visitors, and leadership in scientific research and conservation education. The Zoo is accredited by the American Alliance of Museums (AAM) and by the Association of Zoos and Aquariums (AZA).



Memo

To: Mr. John Walczak, Director
Louisville Zoo

From: Mary Knopf, PE
Mark Schuhmann, PE
Wood Environment and Infrastructure Solutions, Inc.

Date: March 14, 2019

Re. Louisville Zoo- Mega Cavern Subsidence

The purpose of this memorandum is to provide a brief summary of our visual observations and recommendations made regarding the area of ground subsidence observed at the Louisville Zoo property. Wood geotechnical engineers performed numerous site visits between Wednesday, March 6th and Tuesday, March 12th to complete a visual assessment of the ground subsidence site and adjacent areas. These observations and comments refer to the area of subsidence which occurred on March 6th, 2019.

The area of ground subsidence is located in an undeveloped and unoccupied area of the Zoo along the southern property line, north of Taylor Avenue and the Louisville Mega Cavern. The subsidence area is bounded by a gravel maintenance roadway to the south, a second gravel maintenance roadway to the west, a chain-link fence and an asphalt roadway to the north, and a treed area to the east. The subsidence area site is partially covered in mature trees and vegetation. The area of ground subsidence is visually estimated to be 80 yards long (in the east-west direction), 50 yards wide (north-south direction) and 40 feet deep. The perimeter of the subsidence area is well defined and exposes varying thicknesses of limestone rock.

Wood was provided an escort in the Louisville Mega Cavern by a Professional Mining Engineer (Mr. David Newman, PhD, PE, PG with Appalachian Mining & Engineering, Inc.) who was retained by the Louisville Mega Cavern. We viewed the subsidence area as well as the portion of the Louisville Mega Cavern, which was accessible by foot and underlies the Louisville Zoo area. The subsidence area is well defined, and we did not observe areas of obvious concern outside of the boundary restricted area noted below. The cause of this subsidence is undetermined at this time. The area of the Louisville Zoo property where the subsidence is located is near the eastern boundary of the Louisville Mega Cavern. An adjacent area of the Louisville Mega Cavern between the subsidence area and Entrance 4 of the Louisville Mega Cavern was identified by the Mining Engineer as an area that will require remediation. We recommend the east-west running gravel maintenance road located south of the subsidence area and north of the Zoo property line, be closed until this area has been remediated and additional investigations completed to evaluate the eastern extent of the mine. It should be noted that the location of the area requiring remediation was noted below ground and the correlation to the above grade location will be provided by Louisville Mega Cavern.

We believe a physical barrier should be erected on the ground surface no less than 40 feet from the perimeter of the subsidence area on the west, north and east sides and extending to the Louisville Zoo's property line on the south side. The barrier should stay in place until a permanent solution has been determined and implemented.

This memorandum is for the exclusive use by the Louisville Zoo only. It may not be relied upon by any other parties. We trust the information contained in this memo meets your current needs. If you have any questions, please do not hesitate to contact us at (502) 267-0700.

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Wood Environment and Infrastructure Solutions, Inc.

Wood is a global leader delivering technical, engineering and project services across the entire asset life cycle. We operate in more than 60 countries, employing about 60,000 people. We provide performance-driven solutions from development to decommissioning for a broad range of customers, including government services and public agencies, energy, process and refining, power and utilities, mining and manufacturing.

Our Louisville office has been part of the city's landscape for more than 55 years. We draw upon the skills and experience of more than 60 local managers, professionals and technicians to serve the needs of our customers, regardless of project size or complexity. One call puts you in touch with local knowledge, as well as some of the world's most prominent technical, engineering and environmental experts.

In addition to the proud work we do for the Louisville Zoo, Wood has provided geotechnical and environmental consulting services for numerous well-known Louisville Metro area projects, including the KFC Yum! Center, Louisville City FC Soccer Stadium, Cardinal Stadium, Churchill Downs expansion, Muhammad Ali Museum, and numerous projects for the University of Louisville.