GREENBAUM ASSOCIATES, INC.
GEOTECHNICAL & MATERIALS ENGINEERS

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September 24, 2021

Mr. John Miller
Miller Wihry
1387 South Fourth Street
Louisville, KY 40208

Re: Karst Survey
9021 Taylorsville Road
Louisville, Kentucky
Project Number 21-221G

Dear Mr. Miller:

On September 16th, 2021, A geologist from this office walked the above referenced site to discover any evidence of karst development and found none. The property is relatively level with a stream running a short distance to the east of the east property line. The contact between the Jeffersonville Limestone and the Louisville Limestone runs north to south near the existing building according to mapping by the Kentucky Geological Survey. The Geological Survey describes the Jeffersonville Limestone that underlies the western portion of the site as:

> Limestone, olive gray, brownish gray, or medium to light gray; weathers pale yellowish brown to very light gray to light yellowish gray; pyritic; prominent stylolites, especially at 6 and 11 feet above base; scattered banded chert in thin irregular stringers; fossil fragments abound in a matrix of silt sized lime mud or sparry calcite; weathered outcrops characterized by 0.1 to 0.3 foot thick slabs of cross-bedded limestone with fossils etched in relief. Abundant whole fossils: large colonial corals in lower part and the brachiopod Brevispirifer gregarius in upper part.

The Beechwood Limestone that lies above the Jeffersonville Limestone is known for extensive karst development. Though Karst development is not unheard of in the Jeffersonville Limestone, it is not common.

The Kentucky Geological Survey describes the Louisville Limestone that lies under the eastern portion of the site as:

> Dolomitic limestone, light gray, yellowish gray, light brownish gray, weathers to light brown, medium gray; fine grained, thin to very thick bedded. Thin, irregular chert nodules in several layers near top; calcite is scattered throughout in small patches less than 2 inches in diameter. Fossils moderately abundant, include distinctive chain coral Halysites sp., and brachiopod Pentamerus sp.. Unit is resistant and forms a broad upland in central and southwestern parts of quadrangle; soil cover

probably less than 10 feet thick; locally may include unmapped residuum of overlying Devonian limestones. Lower contact locally gradational over interval of 6 to 12 inches, poorly exposed.

There is no reason to believe that there is a risk to an existing or future structure on this site as a result of karst development in the form of development of as sinkhole or spring.

If you have any questions regarding this letter, please call.

Sincerely,

GREENBAUM ASSOCIATES, INC.

Sandor R. Greenbaum

Digitally signed by Sandor R. Greenbaum
Date: 2021.09.24 13:24:34 -04'00'

Sandor R. Greenbaum, P.E.
Principal Engineer