

February 13, 2017

Mr. Dave Gray
President, The Center for Sustainability and Conservation
Pensacola, Florida

**RE: Mosaic Sinkhole; Comments on Hydrographs contained
Within a July 2016 FDEP Monitoring Report**

Dear Mr. Gray,

Patton Geologics, Inc. was authorized by you on February 10, 2017, to review a series of documents, press releases, videos, and public information, for the purpose of providing an interpretation of data that was previously presented by Mosaic to the Florida Department of Environmental Protection (FDEP) in a July 2016 report under FDEP Consent Agreement OGC99-1941.

The report contains three main categories; **Water Quality Monitoring, Water Level Monitoring, and Groundwater Monitoring**. Recent publicity and concern has been raised regarding the Water Level Monitoring portion of the report. Specifically, a retired individual, who is not licensed, Florida Code 492.112, to practice geology/hydrogeology in the State of Florida has made a claim that based on the hydrographs contained within the report that evidence of the development of the 2016 Mosaic sinkhole was contained within page 5 of the report and that a full scale investigation should have been performed to perhaps prevent the 2016 sinkhole collapse.

Based on limited knowledge in regard to well location, construction details, site history and review of recent press releases, videos, and public information, Patton Geologics provides the following interpretation of data.

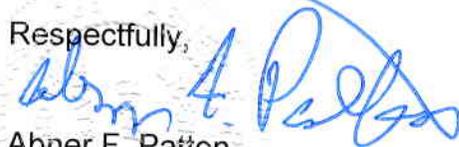
- In this part of Florida, there are typically three (3) recognized aquifers, the Shallow or Surficial, the Intermediate, and the Floridan. The aquifers are separated by "confining units" comprised of materials less permeable than the aquifer production zones. The confining units are not absolute and have varying permeability within the confining units allowing for natural leakage or communication from one aquifer to another.
- Based on information obtained and reviewed to date, it is our interpretation that the significant rise in water levels in wells PC-2B, PC-3 and PC-5 is not related to an event associated with the 2016 sinkhole collapse. In fact our interpretation would be just the opposite response, significant **decline** in water levels, would

have occurred as the sinkhole was developing. If a void in the Floridan collapsed and propagated upward, the confining unit between the intermediate and Floridan aquifers would be eliminated allowing the water from the intermediate aquifer to drain into the Floridan thus lowering the water level of the intermediate aquifer, not raising it.

- In our review, we noted references were made in regard to a grouting program conducted in the spring/summer of 2015. It is our interpretation that the significant water level changes in wells PC-2B, PC-3, and PC-5 are the result of a successful grouting program within the confining unit. The vertical spikes within well PC-1b would be indicative of the actual injection of grout into the formation with an immediate decline upon grout completion. Subsequent to the successful grouting program of a leaky area of the confining unit, it should be expected that the water level in the intermediate aquifer would rise. Subsequent to the grouting program the water level elevations between the lower zone of the confining unit and the Floridan aquifer should increase which is observed as a result of the reduction of leakage across the confining unit.

Patton Geologics, Inc. appreciates the opportunity to be of service to you and will continue our review of information obtained from FDEP. If you have any questions, please feel free to call.

Respectfully,



Abner F. Patton
Florida P.G. #474

Patton Geologics, Inc.