



Marine Engineers and Environmental Consultants

April 14, 2023

To: Wild Blue Community Development District c/o Chesley 'Chuck' Adams Jr.

From: Hans Wilson, P.E. *Hans Wilson*

Copy: Carl Barraco

Subject: Hurricane Ian Retaining Wall Impacts Assessment – Follow Up

The following were general discussion points related to the final report dated March 6, 2023. This should be considered an addendum or attachment to the report to clarify some of the questions posed to us by CDD representatives. Many of the responses are the same as provided to representatives for the Blue Lake (aka Vista Blue) community, in part because the retaining wall design was the same and many of the assumptions were similar.

In our discussion with Josh Maxwell from Turrell, Hall and Associates (THA), we discovered some issues not known to us prior to the report submittal. Carl also provided us with a copy of the Administrative Amendment (ADD2017-00180) regarding deviations from the Land Development Code.

The fundamental issue with the retaining wall failure is the loss of the littoral shelves. Without the protection of the retaining wall by the littoral shelves, their eroded profile resulted in exposure of the retaining wall, converting it into a “seawall” for which it was not designed.

The question came up regarding a standard or code for shoreline design in lakes. Unlike a Dept. of Transportation Manual for roadway design that can be referred to for a specific road type, the design of shore protection structures is unique to the waterbody. It is a mixture of understanding the condition of the shoreline in terms of soil type, slopes, upland uses, wind and wave conditions, and uses on the water.

For WildBlue lakes the treatment options would have been based on a selection of factors that affect the stability of the shoreline and would then have been vetted with the ownership. This includes establishing the design criteria for lake elevations and profiles, wind speeds, fetch distance, an evaluation of the vulnerability of the site, and the available budget for shoreline stabilization. It appears that THA did a study of wind direction and speed and arrived at a conclusion that the shorelines that existed at the

site could resist normal wave heights of 6” and storm wave heights up to 3’, based on existing site conditions. Shoreline stabilization was recommended for the longer fetch distances. Drawings observed in the Administrative Amendment included the placement of an offshore riprap breakwater to protect the littoral shelves. This design was much like the example we provided in our initial report and appears consistent in thought between THA and Hans Wilson & Assoc. Before any consideration is given to repairing or replacing the retaining walls, a more thorough assessment of the littoral shelves and how best to restore and protect them is in order.

Josh (THA) also commented that there were disparities in the actual littoral shelf plantings where those in Blue Lake appeared denser and more capable of resisting wave erosion forces while those in WildBlue appeared less dense. The age of the plantings is also a factor that likely played into the condition of the shoreline post Hurricane Ian. The south side of Blue Lake appears to be where the retaining wall construction first began, as seen in the Lee County 2019 aerial. By 2020 Blue Lake and the south lake in WildBlue had been completed, allowing for at least two years of plant growth prior to the hurricane. The north end of the north lake in WildBlue was still untouched. It appears that not until the end of 2021 or early 2022 were the littoral shelves planted, reducing the time available for the root systems to establish. This was a contributing factor to the loss of the littoral shelves.

Regarding restoration costs we provided some linear foot prices for repairs and replacement, but this is totally dependent on what the CDD wants to pursue. Until a decision is made regarding replacement, selection of an alternative treatment, and resolving issues related to compliance with the Lee County Development Order, a final cost is indeterminate. And regardless of options selected, there will always be the potential for compromise of the shoreline if we have another storm similar to Hurricane Ian, which has been recently upgraded to a Category 5 hurricane. The only way to address that level of impact is to expend an enormous amount of money to stabilize the shoreline for all possible conditions and this is likely cost prohibitive. It is a judgement call that falls on the shoulders of the CDD and residents relative to how best to repair the littoral shelves. I would mention that if any further deviations to the Land Development Code are needed, based on the hurricane impact, we are likely to have a sympathetic ear with the county based on the hardship experienced from the hurricane and future storms.

It is critically important to understand the role of the littoral shelves relative to the retaining wall. They are the principal component of shoreline stabilization, with the retaining wall almost functioning more as an architectural feature used to separate the littoral shelves and planting areas from the upland areas associated with the residences. While the report contains an in-depth analysis of the retaining wall under

conditions that reflect loss of the littoral shelves, the end result is moot unless the littoral shelves are first restored and then protected from future erosion events.

Some additional points of clarification are needed regarding the engineer of record and the contractor. It appears that Josh (THA) was the engineer of record for the retaining wall for both the WildBlue and Blue Lake shorelines. Josh is a professional engineer, with project experience in the marine environment and qualified to perform this service. Brian Midolo appears to be the principal representing Marine Contracting Group, who is also qualified to build the retaining wall. During our site visit there did not appear to be any deviations from the construction plans. The only anomaly noted was some sections of the retaining wall where the littoral shelves appeared to remain intact, had more than 1.75' of exposed face. It is not known whether this was a result of Hurricane Ian or the condition of the site post construction. It should also be noted that this report was focused on the impact of Hurricane Ian on the retaining wall and did not include an exhaustive assessment of the process leading up to the selection of the final design or a critique of the construction installation process.