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[redacted]
4010 Vistamar
Christiansted, VI 00823
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Dear Ms Dorsey,

As you requested, I have inspected your Vistamar Condominium unit 4010 at Estate St. John. As they relate to the structural issues with your condominium unit, I also inspected the adjacent units 4011 and 4013 and the cistern underlying all the units in the building (building B-1) - units 4010 through 4016, and the demolished section of the adjacent building to the west. A link to photos, taken during my site visits, supporting this letter, is included with the e-mail transmittal of this letter.

General Configuration:

The site for the building appears to have originally been a hillside facing southeast sloping down to a normally dry watercourse flowing to the northeast about 25 yards from the southeast corner of the building. The site was graded to provide a relatively flat elevated rectangular area running north-south which is wide enough for parking on the west side and the building footprint on the east side. Based on visual observations of the terrain, it appears that the building and cistern were primarily built on fill. “Fill” is relocated soil material, used in this case to elevate the ground surface for construction above the pre-existing ground surface. At the south end of the building the terrain consists of an 8 degree downward slope in the first 30’, and then a steep wooded slope to the watercourse to the southeast. At the north end of the building there is a 5’ wide flat area adjacent to the building and then a 39 degrees approximate downward slope to land gently sloping to the east fence about 10’ below the ground level adjacent to the building. At the east end of the building the downward slope in the first 20’ from the building is about 22 degrees transitioning into a flat area about 10’ lower than the ground adjacent to the building.

The USGS Soil Survey for the general vicinity indicates the soil type as Arawak Gravelly Loam – Very Stony with “moderate” shrink-swell potential. Soils vary in shrink-swell potential from “low” to “moderate” to “high”. Shrink-swell potential is proportional to clay content. Test holes were dug at the south, east, and north ends of the building about 20 feet from the building

EXHIBIT 2

centered on the respective side of the building. Holes were dug to a depth of 2 feet at the north and east ends and to about 18" on the east side where rock was encountered. See photos link folder "Soil Inspection".

The underground cistern runs the length of the building and is about 10 feet deep with poured concrete floor and outer walls. The cistern is compartmented into 17 sections by full height CMU block interior walls. Six transverse interior walls are located to support the interior walls of the seven units above. One longitudinal interior wall runs down the center, and serves to reduce the transverse span of the overhead floor slab. The interior walls have 3' x 3' passages at floor level for water flow and inspection.

The continuous concrete slab floor for the living spaces lies partially on grade and partially spans across the exterior and interior walls of the cistern.

The walls of the living spaces are CMU concrete block.

The roof is a flat concrete slab pitched for drainage to downspouts within the walls. The downspouts originally filled the cistern with rainwater, but are currently plumbed to flow directly to cistern overflows at the north end of the building.

Structural Issues:

Within the cistern, cracks were noted in the outer walls and the floor slab for units above. Any cracks in the floor of the cistern were not visible due to mud and water covering the floor. The most severe cracks were noted in the cistern compartments below unit 4011 where there is a vertical crack up to ¼ inch wide on the east exterior wall, connected to a crack across floor slab, connected to a crack down the west wall. Similar, but less wide cracks were noted in the compartments below units 4012, 4014, 4015, and 4016. The width of the cracks in the outer cistern walls generally increase with height on the wall.

Within units 4010 and 4011 living spaces, cracks were noted in the walls. The orientation of the cracks appears to indicate that the floor is moving to the south and down, away from the ceiling.

It was noted that the adjacent upslope building is missing a section at its south end. I was informed that this section was demolished due to structural issues. The floor slab on grade remains, and large transverse crack is visible. On this slab and on the roof line of the subject building B-1, there is a visually perceptible slope downward to the south.

Conclusions:

When a building is built on fill, it is critical that the fill has characteristics and is compacted properly for long term support of the building and prevention of subsidence.

Subsidence is the downward movement of the ground and may have several causes. Insufficient compaction of fill and/or use of fill with poor characteristics, when the site was being prepared for construction, may be causing long term subsidence of the ground under the weight of the structure. Movement of water in the ground may also cause subsidence.

Based on direct observation and the locations and orientations of the cracks, subsidence appears to be occurring at the ends of the building with the south end having the most subsidence. If the rock encountered in the hole dug at the east side at mid-length of building, and relatively soft fill in the holes at the ends is indicative of the material underlying the building and cistern, subsidence at the ends is to be expected.

Subsidence appears to be the primary cause of many of the cracks in the building B-1 and its cistern, and unit 4010 in particular, because it is the last unit at the south end of the building B-1. The cistern may have failed due to long term subsidence which was caused by insufficient compaction, and then movement of water due to leakage of the cistern may have caused further short term subsidence.

The appearance of a large crack indicative of subsidence in the exposed floor slab of the adjacent building to the west, where there is no cistern below the building, supports the supposition that long term subsidence was, at least initially, caused by insufficient compaction and/or poor quality of fill. This building may have developed its structural issues sooner than building B-1 because it did not have the benefit of an underlying cistern structure. The cistern is poured concrete with closely spaced steel reinforcement and it runs the full length of the building. Thus, it helps the building resist bending loads that are occurring as a result of subsidence at the ends of the building.

Moderate shrinking and swelling of the soil corresponding to seasonal changes in soil moisture content as well as tree roots may be a contributing factor to the noted structural issues.

These observations and conclusions may best serve as a starting point for consultation with a qualified Geotechnical Engineer. Geotechnical inspections and expertise should provide a better understanding of the site characteristics that may be causing the structural issues, and the possibilities for remediation.

Sincerely,

Jan Magras, P.E.

Disclaimer and Limitations:

The specifications to be provided per this proposal and my technical advice – whether verbal, in writing or by way of analyses – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. My advice does not release you - the owner, client, your representatives, or your project partners, from the obligation to check its validity and to evaluate my statements as to their suitability for intended processes and uses. The application, use and processing of my advice and anything undertaken by you on the basis of my technical advice are beyond my control and, therefore, I do not represent, warrant, undertake, or guarantee that the use of specifications in the information to be provided per this proposal, and my technical advice, will lead to any particular outcome or result. My specifications and advice are provided in accordance with the terms of the proposal, upon your acceptance, and is limited to the scope of work described therein. Specifications to be provided per this proposal, and my technical advice, are subject to my revision if any additional information, relevant to its conclusions and recommendations, arises after completion of the scope of work per this proposal. Specifications to be provided per my proposals and my technical advice are limited in applicability to the client and structure described at the beginning of this letter. If a section of this disclaimer is determined by any court or other competent authority to be unlawful and/or unenforceable, the other sections of this disclaimer continue in effect. If any unlawful and/or unenforceable section would be lawful or enforceable if part of it were deleted, that part will be deemed to be deleted, and the rest of the section will continue in effect.

Because of the age of the house, and because original plans for the house and existing renovation work are not available, it is understood that some design specifications of the existing house, such as underground septic systems, underground cisterns, wiring inside walls, covered re-bar, and buried footings, may be difficult or impossible to determine or evaluate. It may be necessary to assume that certain existing components were built to customary standards, that they are in serviceable condition, and that they will have sufficient structural integrity to work with and support other structural components. The risks, due to these reasonable assumptions, will be evaluated in good faith, but are hereby disclosed to the owner, client, and their representatives, who will assume full responsibility for, and acceptance of the consequences of, these assumptions being incorrect.