



**COMMUNITY DEVELOPMENT DIVISION
FREDERICK COUNTY, MARYLAND**

Department of Permits and Inspections
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October 10, 2012

Mr. Mark Hershfield, President
Board of Directors
Canal Run Homeowner's Association

Dear Mr. Hershfield:

The following is the report of my findings regarding the Canal Run Lake and the problems currently being experienced. With this, several misunderstandings may be cleared up in regards to the Lake's construction and subsequent inspection and acceptance. Before getting into the current conditions, I'd like to go through a brief history of the pond design, review and inspection based on the information that the County has in its records.

History:

- The Lake was designed by a Licensed Professional Engineer, Loiederman Soltesz Assoc., Inc. and was approved by:
 - Frederick County, for stormwater management;
 - The Local Soil Conservation District for dam safety compliance to USDA/NRCS Pond MD-378 guidelines; and
 - MDE Dam Safety reviewed and exempted (#97-NT-0299/199763041).
- Construction on and around the Lake began in DEC 2004 and ran through JUN 2006.
- During construction, the Lake received regular geotechnical inspection from Specialized Engineering (Job #032130). Inspection was provided in accordance with ASTM procedures and standard engineering practices, MD-378 and the approved plans (Certification Letter from Specialized Engineering dated 01/30/2007, on file). Detailed reports of the tests conducted at individual stationing (horizontal) and grade elevation (vertical) locations are also provided.
 - This included USCS soil classification and proctor determination;
 - Nuclear density compaction testing in accordance with ASHTO T-99 for the;

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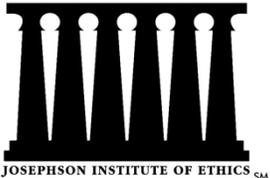
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- Core trench;
- Clay liner;
- Embankment;
- Barrel and riser assembly;
- Cast-in-place concrete structures;
- Concrete cylinder molding and testing.

****Please NOTE:** There is an apparent misconception that the pond was built without a clay liner. This is not correct.

- The pond was designed without a clay liner, however;
 - During construction, limestone pinnacles were encountered and blasting was conducted to obtain proper elevations;
 - Frederick County recommended a clay liner be added;
 - Following the 2000 MD SWM Design Manual for ponds in karst areas, a 12" thick clay liner with the permeability of 10^7 cm/s, was proposed and accepted (*Letter from Specialized Engineering dated 03/14/2006, on file*).
 - Complete testing results of the clay liner are also provided.
- JAN 2007, the Engineer-in-charge (EIC) Loiederman Soltesz Assoc., Inc. provided as-built drawings and certified the Lake as being constructed in accordance with the approved plans and specifications. The SWM as-built drawing package was approved by;
 - County Development Review Engineering;
 - County Environmental Compliance Inspector;
 - Soil Conservation District staff (*John Mickley, who co-authored the MD-378 code*).
- After minor corrections all agencies approved the as-built package with the final approval being in AUG 2008.
- In APR 2010 the Developer, Andy Mackintosh requested the release of the funds held to secure the proper construction of the pond.
 - The Lake had been approved as constructed (*as-built approval*) for nearly 2-years.
 - I inspected the site on APR 08, 2010 and found no apparent problems.
 - I took a picture on the day of inspection.
 - No rainfall within past 7-days (*Source: MDDOT US-340@MD-180*).
 - I recommended the total release of the developer's funds.

Current Issue:

- At your request, I and other County staff visited the Canal Run Lake in MAY 2012 and we witnessed what appear to be the results of geologic and hydrologic processes occurring in portions of the Lake that are affecting the water level and stability of portions of the shoreline.
 - Erosion has exposed pinnacles of rock in various locations around the shoreline (*outer edges*) and in and around the inflow channels.
 - I believe that wave action (*the rise and fall of the water elevation*) is the main cause of the erosion that has exposed the rock.
 - It is likely that by exposing the rock pinnacles, the sealing effects of the surface soil are overcome.
 - I believe dissolution of the limestone is then occurring where flow or standing water is encountering and finding its way into preexisting openings in the rock, such as along joints, fractures, and bedding planes.
- It appears this condition may be limited to the outer edges of the Lake.
 - The inner portion of the Lake appears to be holding water and no solution cavities are observed.
- The constructed embankment appears sound.
 - There is no apparent sloughing or dips in the vertical alignment;
 - There are no apparent solution cavities within the embankment area.
- The concrete weir wall appears sound.
 - There is no spalling or visible structural defect.
 - There is video evidence to suggest “piping” may be occurring along one of the corrugated pipe barrels.
 - Additional testing should be conducted to determine the severity of the condition. No detrimental effects were evident at inspection.

Recommendations:

The Lake is clearly experiencing problems that are affecting both the function and the aesthetics of the Lake. However, reasonable efforts and adherence to all pertinent regulations, in regards to; construction methods and materials; inspections and documentation; and professional certifications were followed in the building of this pond.

I have consulted with the County Attorney's office and with the Maryland Department of the Environment. Accordingly, it is the responsibility of the current property holder to address and correct the current stormwater management issues.

It is my understanding that surface water infiltration into solution cavities does not present an immediate cause for environmental concern provided there are no pollutants being introduced into the drainage area. The drainage area in question presents no evidence of pollutants other than lawn care products and pretreatment is obtained in sediment forebays before entering the Lake. However, structural damage caused by the worsening of the situation is possible. For this reason, I am requesting that the services of a licensed professional geotechnical engineer be consulted. Please contact the professional of your choice and make arrangements for this evaluation at your earliest convenience. Once this professional evaluation is complete and corrections are formulated, those corrections will need to be acted upon in a timely manner.

I recognize that these issues place a burden on the HOA. It is very unfortunate that despite all of the attention given to the design and construction of this facility that it would still develop the defects that it has. Karst topography presents often unknown and unpredictable challenges; we can only rely on the judgment of those professionals who specialize in this discipline.

I will be as helpful as possible within my time constraints and will offer any assistance within my authority to provide. With your permission, I would like to facilitate a meeting of all relevant parties to discuss the Lake and the necessary steps to remedy the problems that have surfaced. Please let me know if you would like to pursue this option toward settlement of the Canal Run Lake issues.

Best regards,



Rick Masser, Chief Environmental Inspector

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