

**HydroTurf Consulting Committee**  
**Board Room, Department of Conservation and Recreation, Richmond, Virginia**  
**Thursday, September 28, 2017**

**Consulting Committee Members Present**

Amanda Hess, Gannett Fleming  
Dr. Art Miller, AECOM  
Dr. Jorge Zornberg, University of Texas at Austin

**DCR Staff Present**

David Dowling, Deputy Director  
Christine Watlington, Senior Policy and Planning Analyst  
Scott Thomas, Regional Dam Safety Engineer  
Mark Kilgore, Regional Dam Safety Engineer

**Others Present**

David Gunn, Henrico County  
Danny Poe, James City Service Authority  
Mike Claud, Timmons Group  
Brad Cooley, Watershed Geo  
Christopher Thornton, Colorado State University  
Christopher Reho, Planet Depos (Court reporter)

**Welcome and Introductions**

Ms. Watlington called the meeting to order and welcomed attendees to the meeting of the HydroTurf Consulting Committee (Committee). Members and staff introduced themselves.

Ms. Watlington reminded everyone that the Committee had been established by the Virginia Soil and Water Conservation Board (Board) at the April 20, 2017 meeting. The Board specifically charged the Committee with conducting a study that shall include but not be limited to evaluating the use of HydroTurf™ for dam overtopping protecting particularly in situations where it is being recommended in order to meet required spillway design flood requirements. The Committee must investigate, at a minimum, whether the product is productive of public safety, durable, and reliable, and if found to be so, under what conditions and engineering protocols it might be properly utilized. The procedures and criteria used must be proven to be current, sound engineering practices.

**Presentations**

Presentations were made to the Committee by Mr. Brad Cooley and Dr. Christopher Thornton.

Mr. Cooley discussed the following with the Committee:

1. An overview of the HydroTurf™ CS system;
2. The installation process for the system;

3. Examples of where HydroTurf™ CS has been installed for overtopping protection; and
4. Benefits of HydroTurf™.

Dr. Thornton presented on the testing of HydroTurf™ had been completed at Colorado State University. His presentation discussed the results to testing on:

1. Steady state overtopping (including the hydraulic jump; impact and abrasion from large debris; intentional damage; and aerodynamics or wind tunnel); and
2. Wave overtop testing (including test methodology; influences of soil type; HydroTurf test; and intentional damage).

The Committee took a break for lunch at 12:15 and returned at 1:00 p.m.

Mr. Cooley presented on non-hydraulic evaluations and testing that has been undertaken. He discussed results related to vehicle loadings; surficial stability (interface and internal shear strength); seepage considerations; weathering and functional longevity; flammability; and carbon footprint. Mr. Cooley also discussed the quality control and quality assurance process for both the manufacturing and installation process. Examples of ongoing maintenance activities and monitoring recommendations were also reviewed. Several project case studies, specifically projects that have been impacted by recent hurricanes were discussed.

The Committee asked numerous questions during the presentations. Questions raised centered on the following topics:

1. Anchor trenches;
2. Compaction of soil and quality of the soil;
3. Certification program for installers;
4. Impacts of cracks or degradation of cement;
5. Concerns about uplift of material in overtopping situation;
6. Testing of the geomembrane; and
7. Whether there were other similar products on the market.

Public comments were accepted after the presentations by Mr. Cooley and Dr. Thornton were completed. Mr. Gunn referenced the reduced cost of HydroTurf™ in comparison to utilizing other materials to perform upgrades on existing dams. Mr. Claud mentioned the interest this product has generated in the Commonwealth among dam owners and encouraged the Committee to approve the product.

The Committee finished their discussion and adjourned the meeting at 3:00 p.m.