



Yerkes Associates, Inc.

Consulting Engineers / Site Planners / Land Surveyors

July 15, 2009

East Goshen Township  
1580 Paoli Pike  
West Chester, PA 19380-6199

RECEIVED  
BY: \_\_\_\_\_

JUL 16 2009

Attn: Rick Smith, Township Manager

Re: Hershey's Mill Dam / Alternative Spillway Configuration  
Proposed Erosion Control Lining Review

Dear Mr. Smith:

At your request we have used North American Green's (NAG) Erosion Control Materials Design Software Version 4.31 to analyze the stability of the NAG C350 erosion control lining. We assumed the cross section would have a 2:1 downslope embankment, and a 110 foot weir as modeled in the provided stormwater management report. We analyzed the stabilization of the embankment slope using NAG C350 in unvegetated, partially vegetated, and fully vegetated states. The NAG C350 lining is guaranteed for 10 years to reinforce the vegetation and control soil erosion (<http://www.nagreen.com/ultimate-assurance-guarantee/guarantee-details.php>). If the integrity of the lining were to be compromised by any means (i.e., burrowing animals, lawn maintenance equipment), accelerated erosion could occur. Based on these results and information, it is our conclusion that the proposed lining would not be suitable for this application.

You also asked about the advantage of a wider spillway. Given a fixed flow rate over the spillway, a wider spillway will result in a slower moving stream of water with less shear stress leading to less possibility for erosion. Given a fixed spillway elevation, the wider spillway will also allow an equal amount of water to pass over the spillway at a lower height allowing for greater freeboard (the height from the water surface to the top of the dam embankment). In the event of a storm larger than the design storm, the wider spillway will accommodate greater flows before overtopping the dam embankment.

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1444 Phoenixville Pike, P.O. Box 1568, West Chester, PA 19380-0078 / Tel: 610-644-4254 / Fax: 610-640-0771

East Goshen Township  
RE: Hershey's Mill Dam  
July 9, 2009  
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Please do not hesitate to call us if you have any additional questions.

Sincerely,

YERKES ASSOCIATES, INC.



Christopher P. Martincic, P. E.  
Project Manager



Albert J. Giannantonio, P.E.  
President