



What's in Your Pond?

Interactive sessions
for local approval authorities
and MDE

September 16, 2020



photo source: MDE





Housekeeping

- The Chat function will be used throughout today's session
- Registration - sign in using the link in Chat
- If you get bumped, lose connectivity, or your screen freezes, leave and reenter the session
- The College of Southern Maryland is providing CEUs/PDHs for all three sessions.
 - A link to your certificate will be available at the end of each session. You have to be both registered and here for the entire program to get CEUs





What's in Your Pond?

A stormwater training program delivered by the

Maryland Department of the Environment

and funded in part by the

Chesapeake Bay Regulatory and Accountability Program

Environmental Training.





Agenda

Presentation One | 09:15 – 09:45 a.m.

Purpose and Background

Jennifer Smith, P.E., MDE Sediment, Stormwater, and Dam Safety

Presentation Two | 09:50 – 10:20 a.m.

Legal and Regulatory Authority, Procedures and MOUs

John Roche, P.E., MDE Dam Safety Permits Division

Presentation Three | 10:25 – 10:55 a.m.

Defining a Dam including Culverts

Amanda Malcolm, P.E., MDE Sediment and Stormwater Plan Review Division

Presentation Four | 11:00 – 11:30 p.m.

SWM Pond Maintenance & Retrofits

Stew Comstock, P.E., MDE Stormwater Program Review Division

Presentation Five | 11:35 – 12:00 p.m.

Next steps, Q&A

Stew Comstock, P.E., MDE Stormwater Program Review Division





- We have scheduled 30 minutes for each session including time for Q&A.
- Questions should be placed in CHAT.
 - For those questions we may not have time to respond to, or should you 'stump' us with a question, we will be creating an FAQ which will be emailed to each registered attendee.
- Each session is for 30 minutes for each session including time for Q&A.
- There will be a 5 minute break between sessions.





What's in Your Pond?

The Universe of Ponds

September 16, 2020

Maryland Department of the Environment

Presented by: Jennifer Smith

Jenniferm.smith@Maryland.gov

Photo source: MDE, Twin Lakes Upper Pond, 2019





Environment Article Section 4-206:

...the Department shall periodically, but at least once every 3 years, inspect and review the stormwater management programs of the counties and municipalities and their field implementation.



What is the Universe of Ponds?

- Small Ponds “small ponds are our little dams”
- Dams “dams are bigger than small ponds”
- Ponds “the stuff smaller than small ponds are still called ponds”

But don't all ponds have dams?

Maybe we should call small ponds “small dams”



- Multiple agencies are involved at the local level in SWM and small pond approval
- Local geographical issues include:
 - use III waters; Tier II waters
 - steel slopes
 - highly erodible soils, clay soils, bedrock
 - high ground water
 - tidal influences; salt intrusion
 - critical areas
 - redevelopment
 - sea level rise
 - lack of topographic relief
- Very little change has been made to design requirements in consideration of climate change
- Need for updated MD 378 training; better guidance documents; better communication



photo source: freeware, cliparts zone

What is the best way for MDE to notify you of new design guidelines?

- 1999 Hurricane Floyd: 15-20 inches of rain in 24 hours
 - Nagels Mill Dam failed and damaged MD 16
 - Stubbs Dam new spillway failed
 - Foreman Branch Dam overtopped and failed
 - Jones Lake overtopped and failed
 - Frazers Mill Dam overtopped and failed
 - Cabin Creek Dam overtopped and failed
 - Sassafras Mill Dam overtopped and failed
 - Von Spreckelson Dam overtopped and failed
 - Meeks Farm Dam overtopped and failed
- 1999 Winter Ice Melt
 - Rolling Green Community Dam failed
- 2001 Winter Storm
 - Woodlawn Landfill stormwater pond dam failed by internal erosion
 - Hunting Creek Dam spillway flows washed out a State road
- 2006 Severe Flooding after 10-15 Inches of Rain
 - Lake Needwood Dam seepage issues and downstream evacuation
 - Galestown Millpond Dam overtopped and failed
 - Wrights Millpond dam overtopped and failed
 - Cabin Creek Dam failed again
- Mill Creek Dam failed
- Irving Mill Pond Dam failed
- 2007 Heavy Warm Rain on Top of Snowmelt
 - Little Youghiogheny Dam Site 1 (Hospital) near failure
- 2008 Heavy Rains in Anne Arundel County
 - Chartwell Golf Course Dam and St. Andrews Road collapsed
- 2011 Heavy Rains
 - Preference Estates Dam in LaPlata overtopped and failed
- 2014 Heavy Rains
 - Blairs Valley Dam flood of record, Clear Spring evacuated
- 2016 Heavy Rains
 - Riawalkin Dam (Nanticoke Road) overtopped and failed 2016
- 2018 Heavy Rains
 - Cascade Lake Dam overtopped and partially failed
- 2019 Heavy Rains
 - Riawalkin Dam overtopped and failed again
 - Frederick Community Church dam overtopping near failure
- 2020 Hurricane Isaisas
 - Running Hare Dam overtopping near failure





**Loveton Farm SWM Pond
Dam Piping Failure
Baltimore County - 1989**

photo source: MDE



photo source: MDE

Preference Estates Pond Dam Failure Charles County - 2011

1 MAR 2012



**Stubbs Farm Dam
Spillway Failure
Kent County - 1999**

photo source: MDE



**Barren Mill Dam Failure
Wicomico County - 2016**

photo source: MDE

07.14.2016



photo source: MDE

**Big Mill Pond Failure
Worcester County - 2016**



**Riawalkin Pond
Overtopping Near Failure
Wicomico County – 2016 & 2018**

photo source: MDE



**Cascade Lake
Overtopping Near Failure
Carroll County - 2018**

photo source: MDE



**Frederick Community Fellowship Church Pond
Head Cut on Downstream Slope
Frederick County - 2019**

Photo Source: MDE



photo source: MDE

**Running Hare Vineyard Dam
Overtopping Near Failure
Calvert County - 2020**



Questions to Think About



- Is anyone documenting small pond failures?
- Do we know how many small ponds fail each year in Maryland?
- Do we know why these failure occurred?
- What is the status of the condition of the small ponds in your local jurisdiction?
- How can we reduce the potential for failure?

What's Facing Us As an Industry?

- Loss of historical knowledge
- Laws, regulations, manuals that need updating
- Growing inventory of aging infrastructure
- TMDL MS4 permit focus on pond retrofits
- Climate change
- New technology

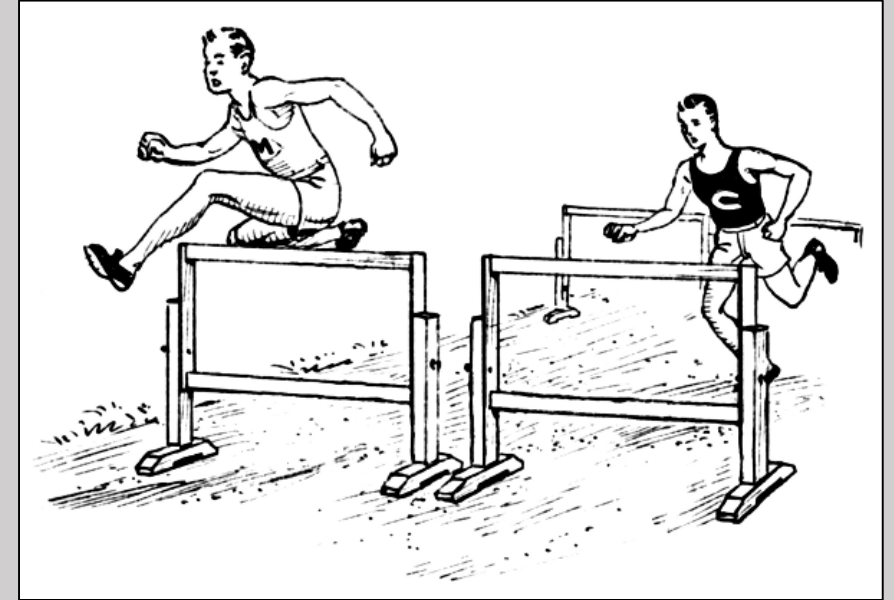


photo source: freeware, wpclipart

Stormwater Management in Maryland

1982 - 2000

2 year, 10 year, 100 year Flood Control



2000 - 2010

WQv, CPv,



2010 - 2020

Environmental Site Design

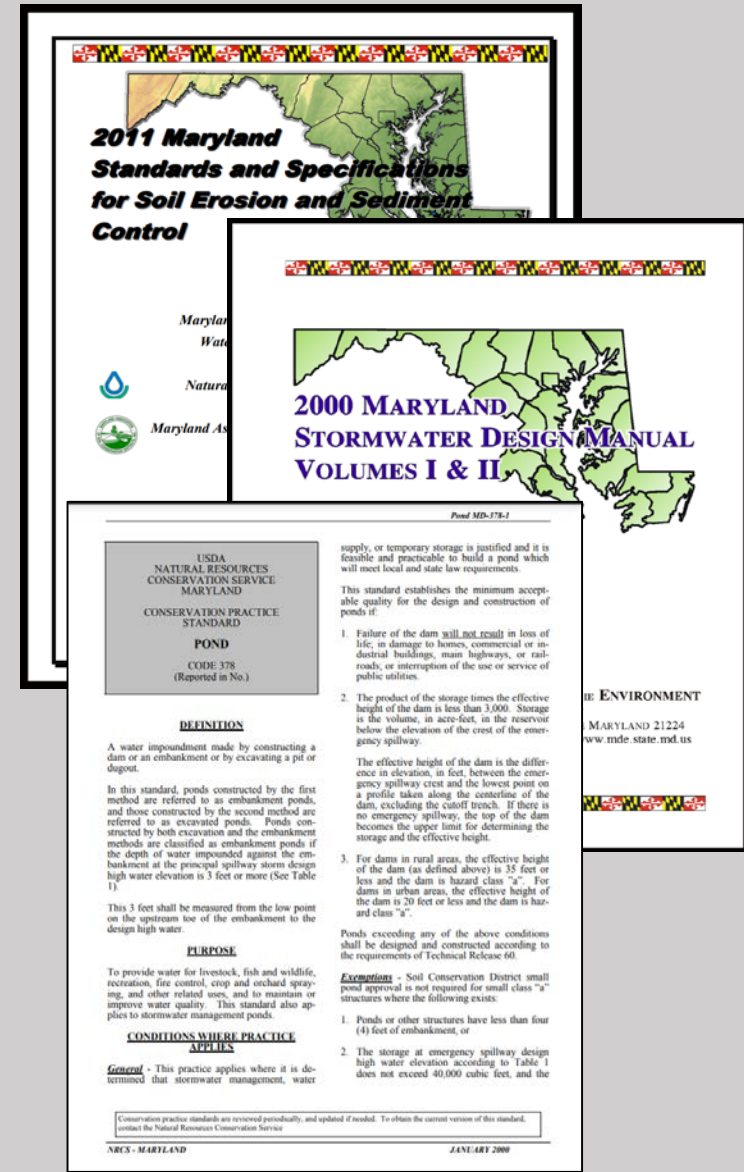


photos sourced from : MDE

Manuals and Regulations

- 2000 Maryland Pond Code 378
- 2000 Maryland Stormwater Design Manual
- 2011 Erosion and Sediment Control Standards and Specification
- Dam Safety Regulations ???

1978



Are the design criteria in these documents still appropriate?

Growing Inventory and Aging Infrastructure

- ~ 15,000 small ponds in MD
- 626 dams in MD
- Control more than a combined DA of 60,000 sq. mi.
- Most over 50 years old
- Some older than 100 years
- ~ 15 small ponds reclassified as dams each year due to hazard creep



Photo Source: Library of Congress, July 1936

Dam/Pond Design Criteria

Federal – USACE, FEMA, NRCS, USBR

State - MDE - Dam Safety

MDE – Plan Review and
Permitting

Soil Conservation District

DNR – Thermal Review

Local - Permits and Engineering Review

Soil Conservation District

Public Works Departments



photo source: freeware, unsplash.com



- **Who is responsible for inspecting the construction of small ponds?**
- **What is meant by height of the dam?**
- **When do I need to get a dam safety permit?**
- **When do I need to perform/review a dam breach analysis?**
- **Who sets the minimum design standards for a dam? or small pond?**
- **When is a culvert a dam?**
- **What modifications (dredging, tree removal, CMAC installation) require approvals? Permits?**



Pond Retrofits and Repairs

- Who is going to pay?
- How much is it going to cost?
- Who is responsible?



Henson Creek Regional Pond, Prince George's County

Climate Change and Urban Flooding

- What are the impacts of climate change on small ponds and dams?
- Are the design storms changing (PMP, ½ PMP, 100 year); do our ponds have enough capacity?
- Can our dams and spillways handle more of these events (100 year storm occurs more often?)



photo source: freeware Pixabay.com



photo source: freeware, Pixabay.com



photo source: freeware, acclaim images

“If everyone is moving forward together, then success takes care of itself”.
-Henry Ford



Questions?





5 Minute Break

