Wheaton Branch Dam Overtopping Protection and Repairs

Introductions

October 12, 2021

- Doug Marshall

Montgomery County, DEP Project Planner

- Gene Gopenko, PE

Montgomery County, DEP Project Manager

- Christopher Stepp, PE

BayLand Consultants & Designers, Inc
Project Manager

- Ethan McGowan, PE

BayLand Consultants & Designers, Inc
Project Engineer

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BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"

Tonight's Agenda

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- Background Information
  - Doug Marshall, DEP
- Montgomery County's Maintenance Requirements and Responsibilities for Wheaton Br. Regional Stormwater Pond
  - Gene Gopenko, DEP
- Engineering, Design and installation of the Wheaton Dam Overtopping Protection
  - Chris Stepp & Ethan McGowan, Bayland
- Construction Schedule
  - Doug Marshall, DEP
- Questions & Answers
  - Project Team

Background

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- Built in 1979 for Flood Control for Downstream Development
- Retrofitted in 1988 for Stormwater Management
- Current Two Projects, Flood Mitigation Project & The Overtopping Protection project

Wheaton Branch Stormwater Pond

Background

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Dam Information

National Inventory of Dams: Dam No MD-00127
Drainage Area: 1.21 sq. mi.
Dam Height: 27 ft
Dam Length: 1174 ft
Year Built: 1979, 1988 WQ retrofit
Hazard Classification: High
Dam Owner: Montgomery County
Dam Operator: MONTGOMERY CO. DEP
Watershed: Wheaton Branch, Sligo Creek, Anacostia River
Inspection Frequency: 1 year

Dam Owner Requirements

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- Facility Inspections, Maintenance and Repairs
- Dam Monitoring
- Emergency Action Plan (EAP)

Dam Owner Requirements

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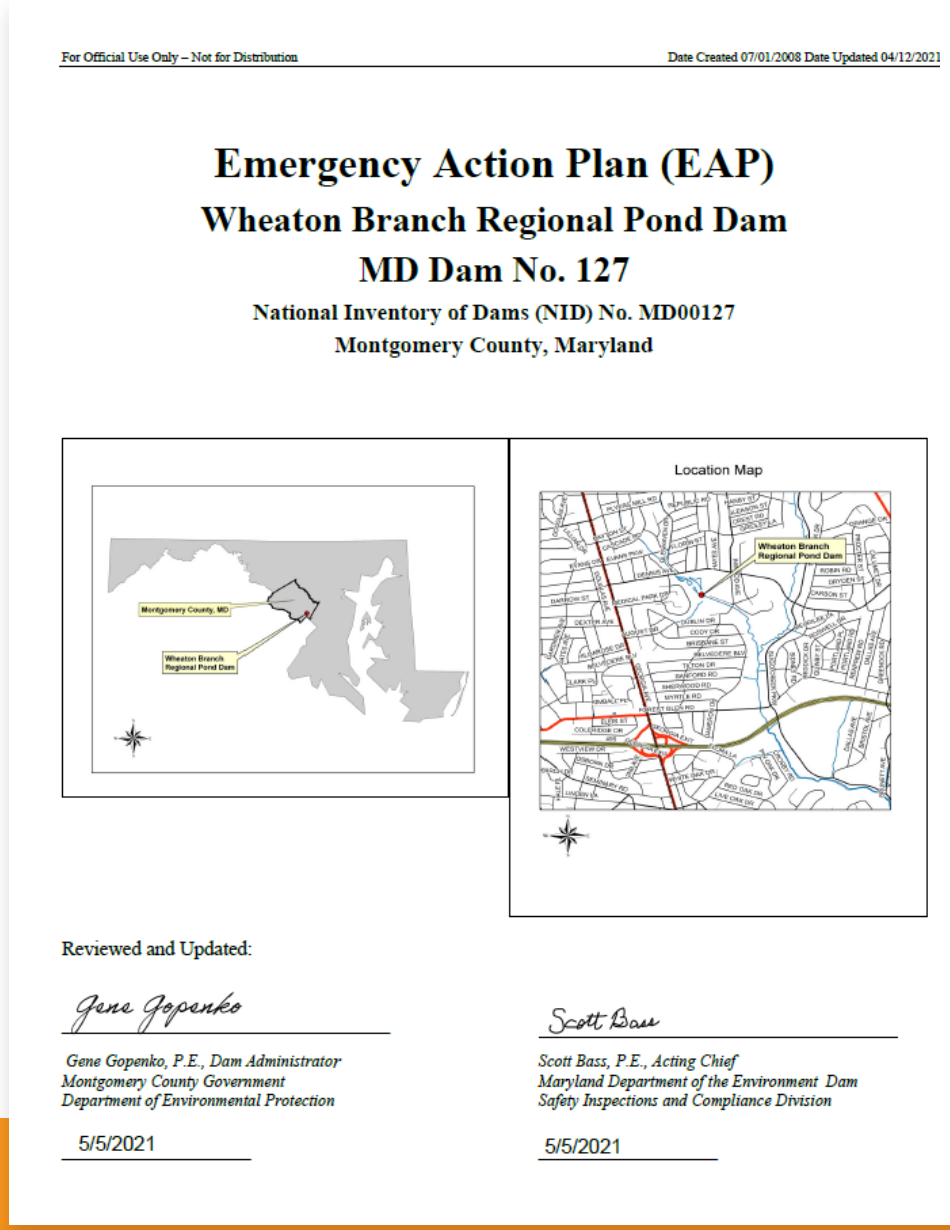
Emergency Action Plan (EAP)

EAP: A formal document identifying potential emergency conditions that may occur at the dam and specifying preplanned actions.

Purpose: To minimize potential failure of the dam or minimize failure consequences including loss of life, property damage, and environmental impacts.



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Date Created 07/01/2008 Date Updated 04/12/2021

Emergency Action Plan (EAP)

Wheaton Branch Regional Pond Dam

MD Dam No. 127

National Inventory of Dams (NID) No. MD00127

Montgomery County, Maryland

Location Map

Reviewed and Updated:

Gene Gopenko

Gene Gopenko, P.E., Dam Administrator
Montgomery County Government
Department of Environmental Protection

5/5/2021

Scott Bass

Scott Bass, P.E., Acting Chief
Maryland Department of the Environment Dam
Safety Inspections and Compliance Division

5/5/2021

Evacuation Map- Downstream

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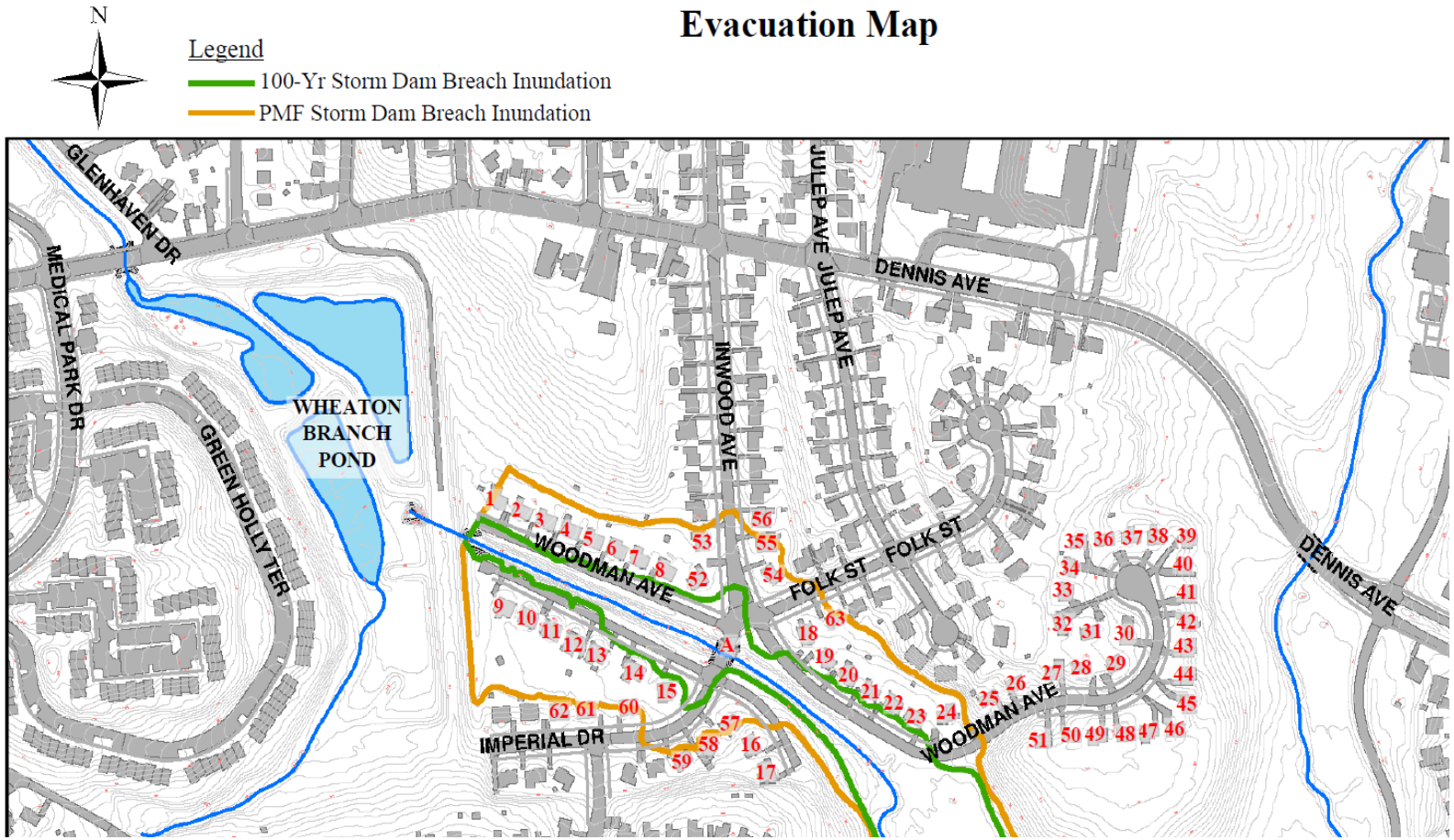

Design Storm

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Design Storm: High Hazard Dams are designed for PMP=27” in 6 hrs

- **Probable Maximum Precipitation (PMP) or Flood (PMF):** The theoretically greatest precipitation or resulting flood that is meteorologically feasible for a given duration over a specific drainage area at a particular geographical location.

Extreme events are rare, but some approach the magnitude of PMF

- 22” in 2.75 hours (1935 - Texas)
- 30.8” in 4.75 hours (1942 – Smethport, Pennsylvania)
- 15” in 24 hours (June 1972 Hurricane Agnes– 12 states from VA to NY
- 24” in 6 hours (1995 – Madison Co, VA)
- 20” in 24 hours (1999 Caroline Co, MD)
- 60.6” in 4 days (2017 Hurricane Harvey, TX)

Project Overview

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Proposed Work

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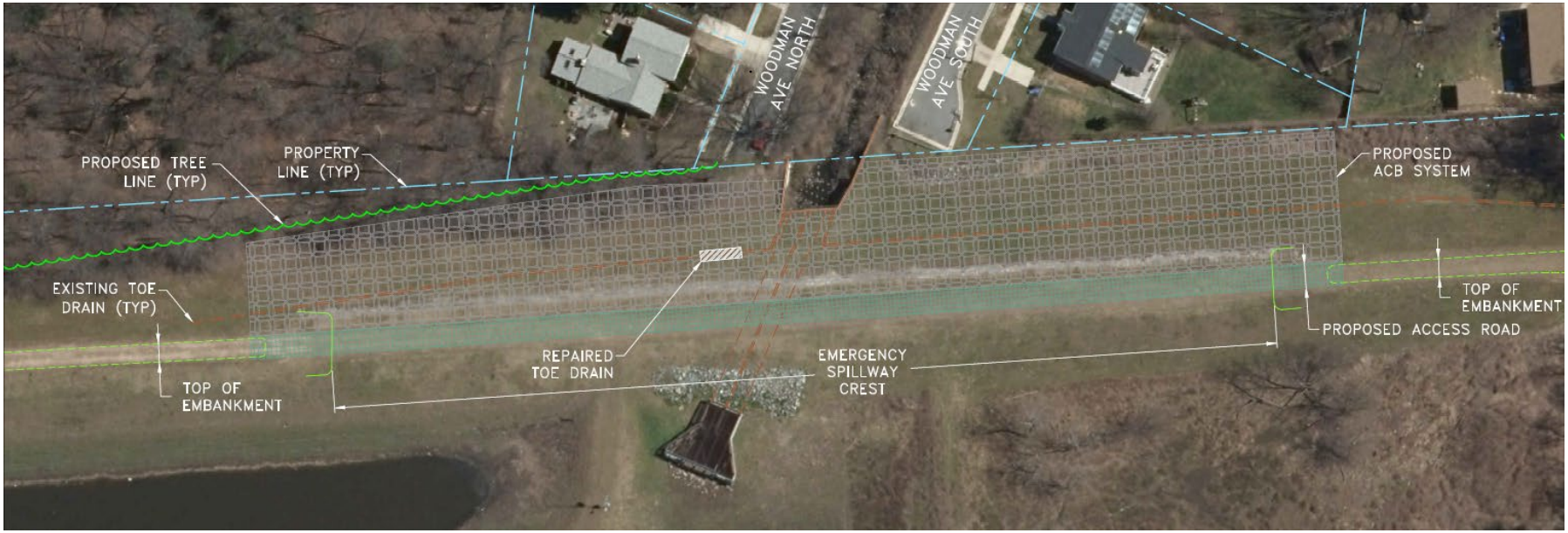

Articulated Concrete Blocks

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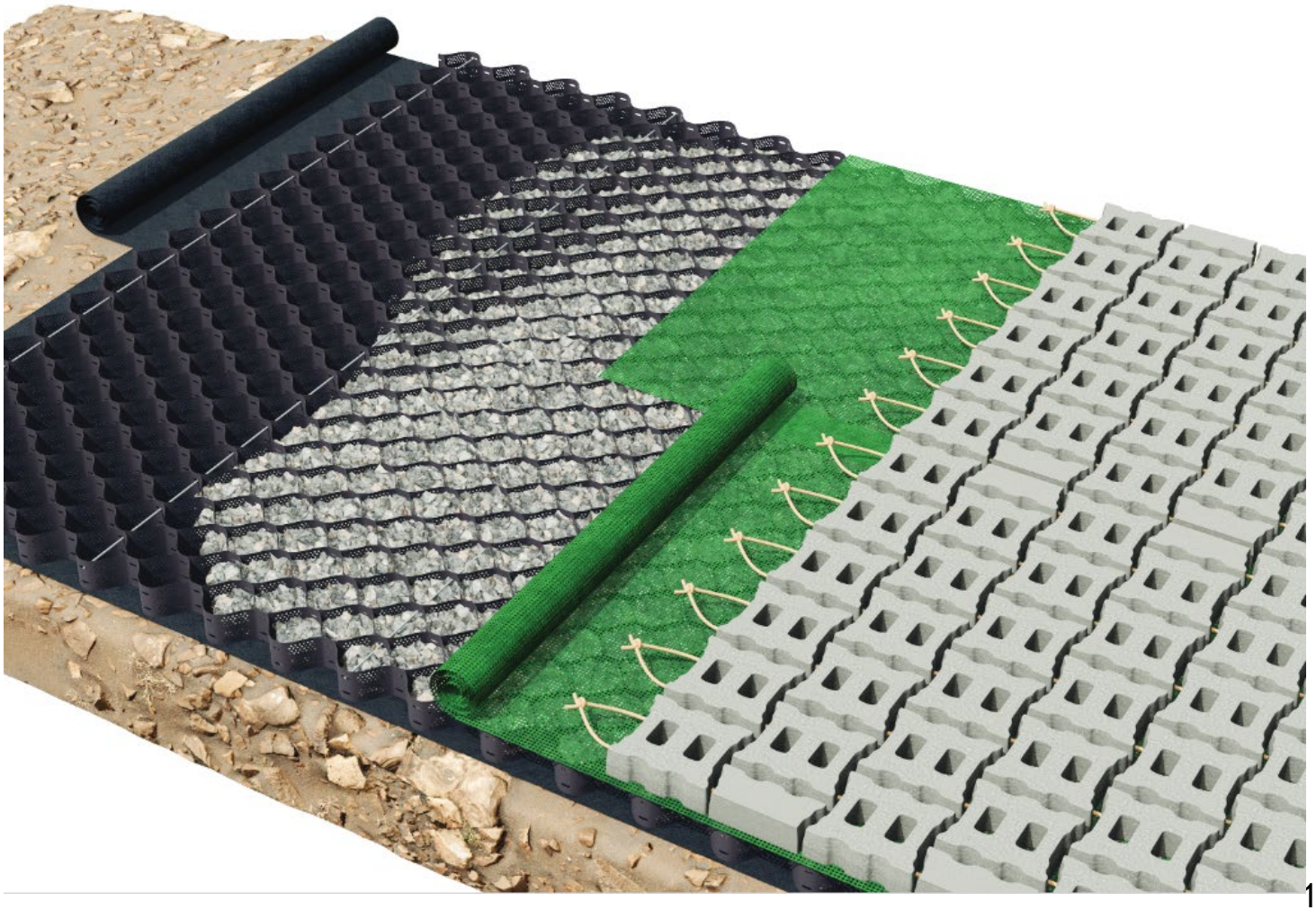

ACB Installation

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Overtopping Condition

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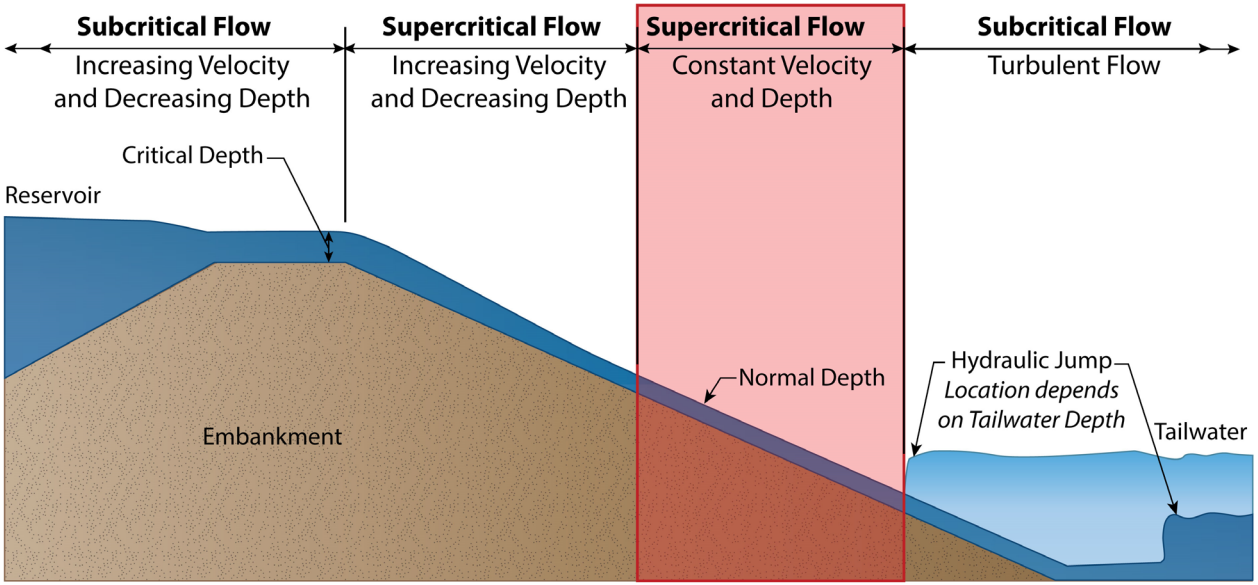
- Provide Slope Protection
- Prevent Erosion/Failure
- Maintenance/Repairs



Design Parameters

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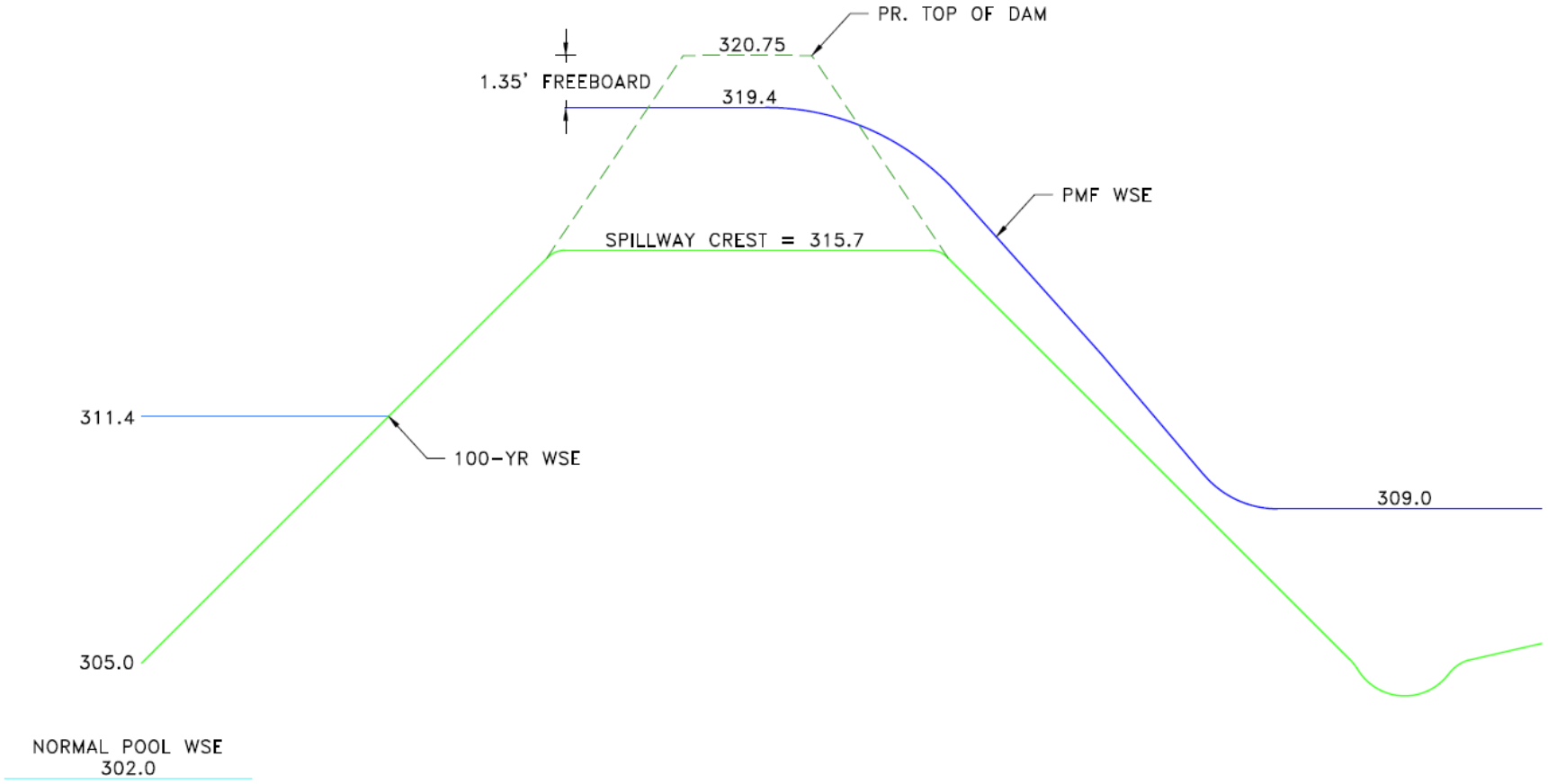

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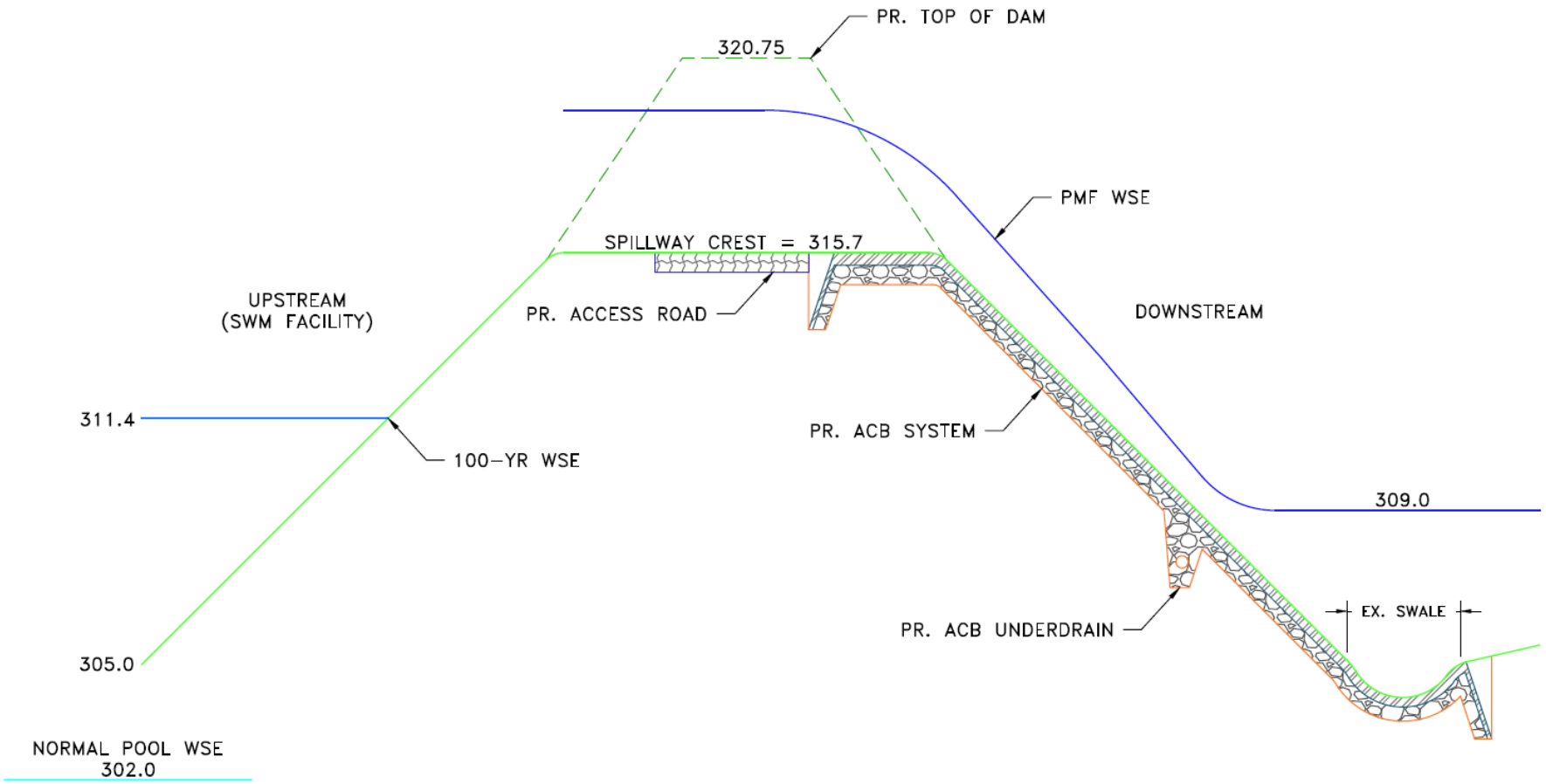

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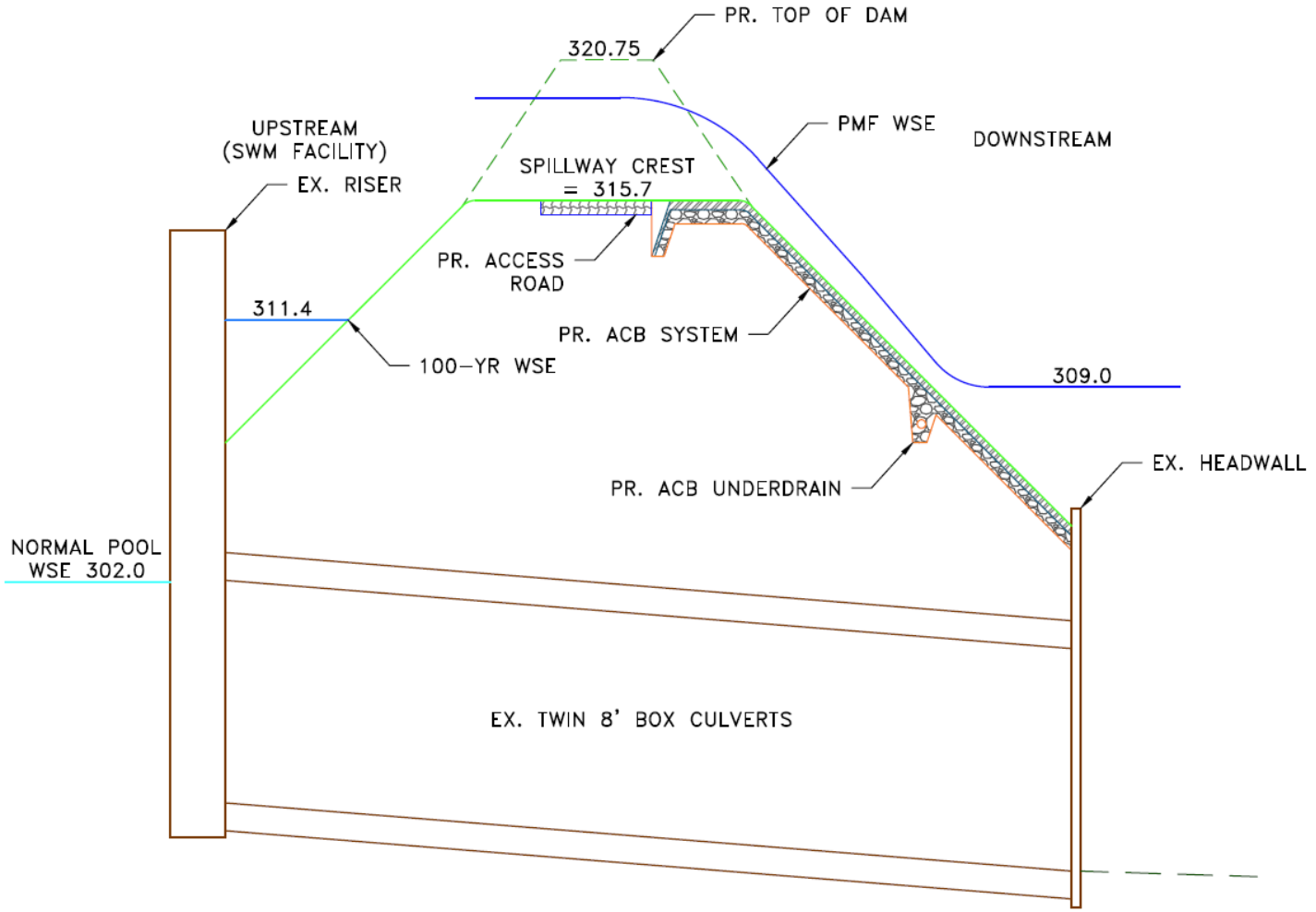

Design Parameters

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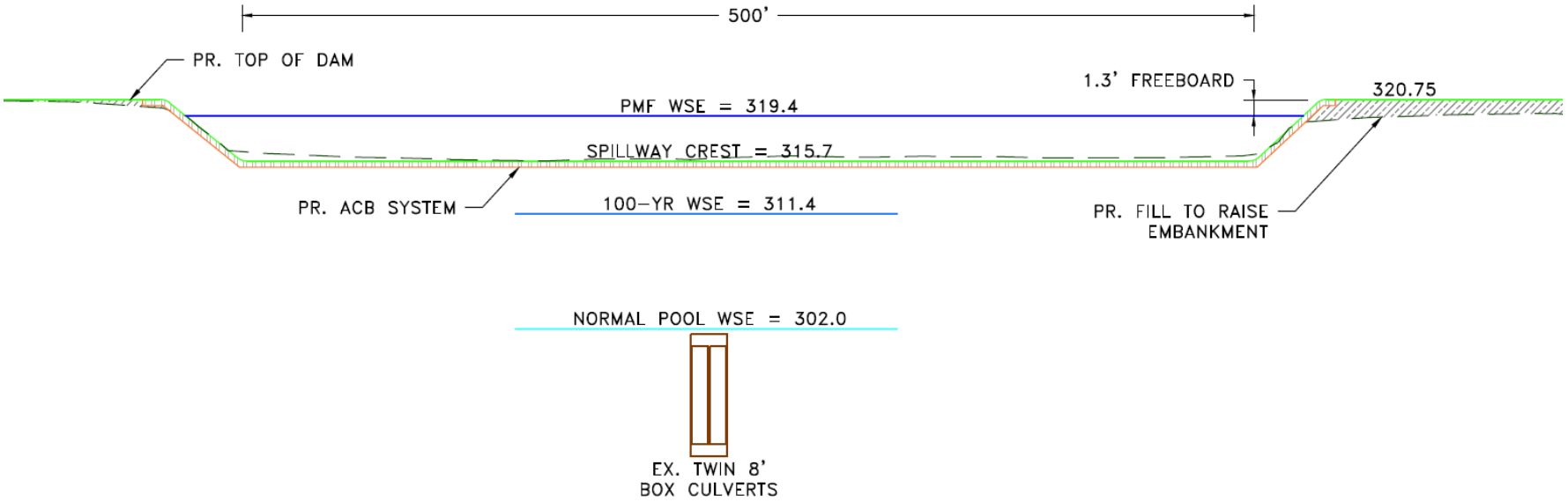

Design Parameters

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- Design Shear: 13 psf
- Design Velocity: 25 fps

	Ground Cover	Max Shear (psf)	Max Velocity (fps)
	Soil	0.40	4.0
Existing →	Turf	1.0	3.5
	Class 1 Riprap (9”)	3.8	9.0
	Class 2 Riprap (16”)	7.0	13.0
	Gabions	10	17
Proposed →	ACB System	30+	15+

Design Approvals

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- MDE Dam Safety Approval
- Montgomery County DPS Approval

In-Depth Geotechnical Analyses - factored into design

Proposed Work

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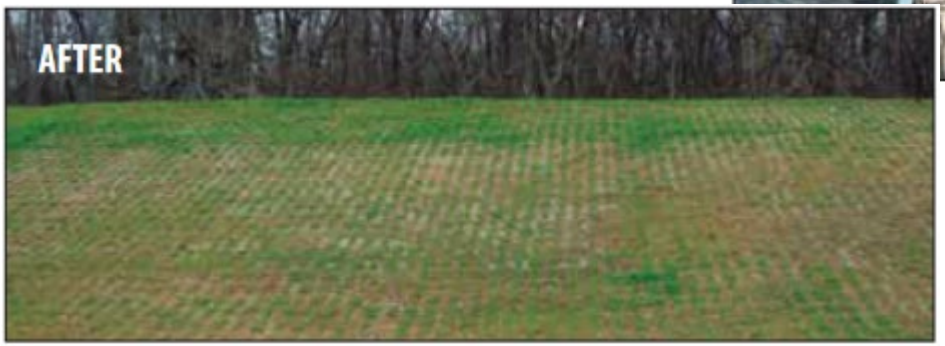
- Stabilize slope with Articulated Concrete Blocks (ACBs)
- Repair Toe Drain
- Minor Grading and Fill at Top of Dam
- Minor Clearing at Downstream Toe of Dam



ACB Shortly After Installation

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Structural Access Road

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- Filled with Soil and Seeded
- Can Handle Heavy Equipment Traffic
- Across Crest of Spillway Only

Toe Drain Repair

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- Replace Damaged Section of Drain Pipe (~20’)

Construction Schedule

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- Anticipated Construction Start: September 2022
- Approximately 16 Weeks of Active Construction:

Construction Sequence

- Install Sediment Erosion Control Measures
- Excavation and Repair of Toe Drain
- ACBs and Access Road Installation
- Permanent Seeding and Stabilization

Construction Impacts

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- Expected Construction Equipment:
  - Excavator
  - Crane
  - Trucks
- Construction Work Hours 7am – 5pm Weekdays Only
  - Power Tools
  - Truck Traffic
  - Dumping Stone
  - Excavation

Questions?

Gene Gopenko,PE

County Project Manager

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Doug Marshall

County Project Planner

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Project Overview

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Design Parameters

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- Factor of Safety for PMF: 2.0