

Dam Ownership/ Enforcement Issue

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March 16, 2021



Maryland
Department of
the Environment

Outline

Who will be the dam owner

Dam owner responsibility/liability

How Dam Safety handle if there is a problem



What is Dam

Dam definition per Code of Maryland (COMAR)

"Dam" means any obstruction, wall, or embankment, together with its abutments and appurtenant works, if any, in, along, or across any stream, heretofore or hereafter constructed for the purpose of storing or diverting water or for creating a pool upstream of the dam, as determined by the Administration (Ref: Water and Science Administration at MDE).



Purpose of Dam

- Public drinking water supply;
- Irrigation;
- Flood control;
- Recreation opportunities;
- Power generation;
- Stormwater management facility;



Hazard Classification of Dam

High Hazard Dam

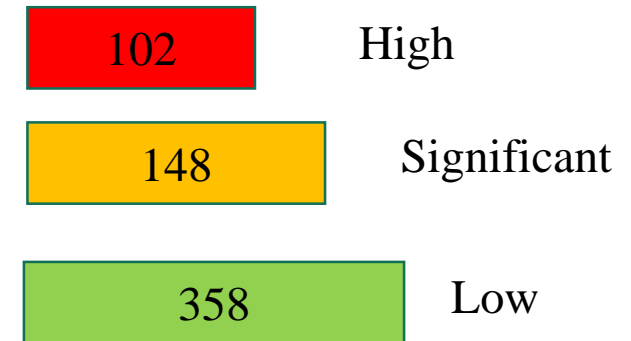
- Probable loss of human life;
- Extensive property damage to residential, commercial, or industrial buildings, and downstream roads;

Significant Hazard Dam

- Possibility of loss of life;
- Possibility of property, roads and buildings damage;

Low Hazard Dam

- loss of life and property damage is unlikely;



Total 627 Dams



Who is the Dam Owner

An owner of a dam is considered to be anyone who owns any portion of the dam, reservoir, or appurtenant works of the dam.

This is generally determined using property boundaries and owner information shown on tax maps from the Maryland Department of Assessments and Taxation.



Type of Dam Owner

- Federal;
- State;
- County and Local governments;
- Water companies;
- Private Corporation;
- Home Owner Association;
- Multiple Dam Owner;
- Individual Owner;



Dam Owner Responsibility

- Need to know basics of a Dam;
- Regularly inspection of the Dam;
- Operation and maintain the Dam in a safe and effective manner;
- Must understand current laws and regulations associated with the Dam;
- Public safety around the Dam;
- Knowledge about the risk and liabilities associated with dam ownership;
- Development and update of EAPs for high and significant Dam;
- Hire qualified dam engineers for any engineering works;
- Financial planning to ensure that adequate funds are available;



Dam Owner Responsibility (Cont'd)

Knowing the full knowledge of responsibility, owner can

- Reduce likelihood of incidents and failures;
- Reduce their own liability;
- Improve the safety of dams;
- Help to reduce the risk to communities;



Dam Owner Liability

The dam owner is liable for the damages resulting from a dam's mis-operation or failure that would result in a sudden release of water downstream.

Owner faces reconstruction costs and possible liability for downstream damages.

Safely maintaining a dam is a key element in preventing a failure and limiting the liability that an owner could face.



Dam Owner Liability (Cont'd)

Resulting Dam failure

- Loses an own valuable asset;
- Loss of life;
- Down stream property Damage (Building, infrastructure);
- Environmental Impact;
- Loss of uses;



Dam Owner Liability (Cont'd)

Liability can be minimize

- Avoiding NEGLIGENCE;
- Obey Standard of Duty;
- Dam Operation and Maintenance;
- Keep safe condition in Dam and around Dam;
- Emergency Action Plan;



Some Common Dam Owner issues

Dam Owner

In Government Organization
and public company

Homeowner association

Individual Owner



Issue

In-charge/manager- change/transfer/retired

In-charge/Management change

Transfer of ownership/sell property



State Dam Safety Law

Dam Safety laws are found in 5-501 through 514 of the Annotated Code of Maryland, Environmental Article

and

The Maryland dam safety regulations are contained in the Code of Maryland Regulations Title 26; Maryland Department of the Environment, Subtitle 17; Chapter .04, Construction on Non-Tidal Waters and Floodplains.

(COMAR 26.17.04.05)



Enforcement Law

Article 5-509 (b) stated that

On complaint or the Department's own initiative, the Department may investigate or examine any reservoir, dam, or similar waterway construction;

If the Department determines that the water infrastructure asset is unsafe, needs repair, or should be removed, the Department shall notify the dam owner to repair or remove the dam, as the situation warrants, within a prescribed time period;



Basic Enforcement steps

Inspection Findings / Report

Ask for certain actions within certain timeframe, educate why important.

“Strict” Inspection Report

More legal language. Set very specific actions and times

Notice of Required Action (NORA)

Very direct demand for action. Clear that inaction will lead to NOV

Formal Notice Of Violation (NOV)/Order

Legal Action as Required



“Emergency” Enforcement

When Dam is in imminent danger of failing

Department can skip the steps and can issue directly NOV to protect public safety and welfare



Some Cases of Enforcement Issue on 2020



Case I

- Dam Owner: St. Mary County DPW;
- St Mary County
- 11 feet tall;
- 125 feet long;
- 3.1 acre pond;
- 3.3 Sq. mi. Drainage Area;
- Low hazard;



Google Photo.



Information received

Receive information about potential failure of Dam

Inspection was conducted by Department

Dam is unsafe and poor condition



Inspection Findings



MDE File Photo.

Lake level at the time of inspection



Inspection Findings



MDE File Photo.

Sinkhole upstream side of the Dam near the spillway pipe.



Inspection Findings



MDE File Photo.

One of the two spillway pipes was completely blocked with debris.



Inspection Findings



MDE File Photo.



Wet spots were observed at the down steam of the Dam in two locations.



Inspection Findings



MDE File Photo

Numerous trees and other woody vegetation on the upstream, downstream slope, and along the toe



Notice Of Violation

Issued the NOV under 5-509b

- Lower the lake level and to maintain the water levels at the depth of no greater three (3);
- Monitor the condition of Dam and report weekly to Dam Safety;
- Retain the services of a qualified professional engineer, to permanently repair or breach the Dam in a safe and environmentally sensitive manner;



Weekly Report



Water surface elevation of the lake.

MDE File Photo.



Weekly Report



MDE File Photo.

Status of erosion



Weekly Report



MDE File Photo.

Lowering the lake level with use of syphon.



Case II

- Privately owned earthen dam;
- Calvert County
- 20 feet tall;
- 300 feet long;
- 6.8 acre pond;
- 0.5 sq. mi. drainage area;
- Low Hazard dam;
- Access road to vineyard (about 100 vehicle)



Google Photo.



Strict Inspection

- In 2019 Dam Safety inspected the Dam and following findings found
 - Numerous trees and vegetation at upstream and downstream;
 - Seepage at downstream;
 - The capacity of principle and emergency is inadequate;
- Department notify to Dam owner with a **strict inspection report** within a prescribed time period
 - Remove all trees and woody vegetation from the dam and establish a healthy stand of grass in its place;
 - Retain the services of a qualified professional engineer to study for spillway capacity; prepare remedial designs as necessary for spillway, trash rack and seepage control.
 - Removal of fill placed on the emergency spillway channel to restore emergency spillway capacity;



Emergency Inspection

Inspection of the Dam was conducted on August 4, 2020, after receiving information that the Dam was overtopping due to rainfall runoff from tropical storm "*Isaias*".



Inspection Findings



MDE File Photo.

Lake level at the time of inspection



Inspection Findings



MDE File Photo

Evidence of overtop the Dam-downstream slope



Inspection Findings



MDE File Photo

toppled trees, head cutting, and significant erosion on the downstream slope



Inspection Findings



Numerous trees and other woody vegetation at upstream and downstream

MDE File Photo.



Notice Of Violation

Issued the NOV under article 5-509 b

- Maintain the water levels at five (5) feet or greater below the normal pool elevation;
- Perform emergency repair work to stabilize the head cut erosion area;
- Remove all trees from the upstream and downstream slopes of the dam embankment;
- Retain the services of a qualified professional engineer, to perform a comprehensive investigation of the Dam, including spillway capacity, and seepage control
- Apply for all other necessary environmental, construction, and grading permits and complete the approved repairs;



Emergency work



MDE File Photo.

Lowering the lake level using the pump



Emergency Work



MDE File Photo.

Filled with gravel in erosion area



Removed tree and other woody vegetation at upstream and downstream



Case III

- Privately owned earthen dam- multiple property owner;
- Carrol County
- 16 feet tall;
- 1000 feet long;
- 6.5 acre pond;
- Use III waters;
- low hazard;
- Not Dam Safety inventory;



Google Photo



Unauthorized work

Receive information about unauthorized work and inspection was conducted

work done by unknown person per one of Dam owner

Dam found to be unsafe and poor condition after the inspection



Inspection Findings



MDE File Photo.

Upper portion of riser toppled and spillway riser plugged with mulch bag



Inspection Findings



New outlet pipe installed



MDE File Photo.

Inspection Findings



MDE File Photo

Trees and woody vegetation all around the dam,



Notice of Violation

Issued the NOV under article 5-509 b

- Remove riser/barrel blockage (mulch and rock);
- Immediately stop any and all work on any current dam repairs or construction and stabilize any bare earth with grass, seed, and mulch;
- Monitor the condition of Dam and report weekly to Dam Safety;
- Retain the services of a qualified professional engineer, to investigate the Dam and determine appropriate remedial measures for repair work or breach the Dam;
- Emergency repair work can be performed to speed up the process;
- Joint Federal/State Application to get the permit from department, including a final plan and supporting engineering;



Inspection Findings



MDE File Photo

Riser structure completely plugged with concrete



Inspection Findings



MDE File Photo

Removed the existing outlet pipe



ISSUES

- One of owner is out of State, has been difficult to locate, and his business have been dissolved;
- Difficult to conduct enforcement due to multiple dam owner;
- The Department has issue a follow up letter to dam owners with intent to breach the dam of inaction on part of the dam owners;



Thank you

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[mde.maryland.gov/programs/Water/Dam Safety](http://mde.maryland.gov/programs/Water/Dam%20Safety)