

# Maryland Department of the Environment

## Dam Safety Division's

### Emergency Action Plan (EAP) Workshop

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## MDE Information



### GOALS:

- Created in 1987 to protect, preserve and restore quality of Maryland's air, water and land resources;
- Follow regulation and conduct enforcement;
- Assist in environmental emergencies (oil spills, nuclear, etc);
- Conduct long-term planning and research; and
- Provide technical assistance to industry/community on pollution growth;

### ADMINISTRATIONS:

- Water Management Administration (WMA);
- Land Management Administration (LMA);
- Air & Radiation Management Administration (ARMA); and
- Science Services Administration (SSA).

### Notes:

- Over 1,100 MDE employees work at the HQ in Baltimore and Compliance offices in Salisbury, Cambridge, Frostburg, Hagerstown and Frederick;
- Dam Safety Division is under WMA's *Sediment, Stormwater and Dam Safety Program*

## Dam Safety Division

[www.mde.state.md.us/damsafety](http://www.mde.state.md.us/damsafety)



- Ensures dams are designed, constructed, operated, and maintained safely to prevent dam failures and resulting consequences;
- Responsibilities include conducting inspections of dams, issuing permits for construction of new dams and repairs to the existing dams;
- Work with dam owners/operators, emergency management professionals (EOCs) and engineers to develop and exercise 'Emergency Action Plans' (EAPs), to be used in the event of potential or actual dam failures.

## Annotated Code of Maryland – (Laws) Environment Articles § 5-501 -- 5-514



- Conserve and protect waters of the State;
- Supervise construction/repairs of dams/reservoirs;
- Issue permits for construction, repairs of dams/reservoirs;
- Investigate dams and reservoirs in need of repairs and inform owners by letters or Administrative Orders (AO) to either repair or remove the structure;
- If the owner is in non-compliance, Department can make the repairs and recover the expense from the owner directly or in court;
- Violators are assessed a civil fine up to \$5000/day and court fees.

[http://mlis.state.md.us/asp/web\\_statutes.asp?gen&5-501](http://mlis.state.md.us/asp/web_statutes.asp?gen&5-501)

## Code of Maryland Regulations (COMAR)



### 26.17.04.01 -- 26.17.04.05

- COMAR is the official compilation of all administrative regulations issued by agencies of the state of Maryland (eg: MDE, DNR)
- Executive orders of the Governor that are considered generally permanent in nature.
- <http://www.dsd.state.md.us/comar/>

## COMAR - 26.17.04.02



"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 Management Administration at MDE*).

## COMAR - 26.17.04.05



- (1) A person who applies to construct, reconstruct, repair, or alter a dam or reservoir shall engage a *registered professional engineer*, practicing in accordance with the laws of Maryland and *qualified in the field of dam design and construction* to prepare the designs and specifications and to provide supervision during construction of the proposed works. The engineer shall be the engineer-in-charge and shall:
  - (a) Be responsible for assuring that the designs conform to the high standards of professional competence in the specialty of dam design and construction;
  - (b) Assure that the construction is carried out in strict accordance with the approved plans and specifications and under the provisions of the permit; and
  - (c) Submit to the Administration a resume of all previous dam design and construction experience, listing specific responsibilities and a written certification of qualification to act as the engineer-in-charge.

## EIC Certification & Resume



**AFFIDAVIT  
ENGINEER IN CHARGE**

- WMA Permit Application No. \_\_\_\_\_
- My name is \_\_\_\_\_ I am a registered Professional Engineer in the State of Maryland (Registration No. \_\_\_\_\_) in accordance with COMAR 26.17.04.05 A(1) I am qualified in the field of dam design and construction to prepare the designs and specifications, and to provide supervision during the construction of the proposed works of \_\_\_\_\_ dam of \_\_\_\_\_ at \_\_\_\_\_.
- I have reviewed the plans, specifications, design reports (geotechnical, structural, hydrologic, and hydraulic analyses) and am familiar with the assumptions made during the design process.
- I agree, if retained by the owner to perform construction inspection, to assure that the construction will be carried out in accordance with the approved plans and specifications and under the provision of any permit issued by the Maryland Department of the Environment, Water Management Administration.
- This affidavit is to serve as written certification of my qualification to act as Engineer-in-Charge for the project.
- I, \_\_\_\_\_, hereby declare that all information contained in this affidavit is true to the best of my knowledge.
- Attach a resume of pertinent experience.
- Date: \_\_\_\_\_
- (Signature) \_\_\_\_\_
- (Type Name Here) \_\_\_\_\_
- Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.
- Notary Public \_\_\_\_\_
- My Commission Expires: \_\_\_\_\_
- AFFIDAVIT ATTACHMENT FOR ENGINEERING TEAM  
PLANNED FOR DESIGN AND CONSTRUCTION OF DAMS AND RESERVOIRS
- WMA Permit Application No. \_\_\_\_\_
- If an engineering team is planned for the design and construction, one registered professional engineer shall act as engineer-in-charge. However, each individual on the project team shall document that individual's area of responsibility and technical experience. This documentation shall accompany the permit application" (COMAR 26.17.04.05 A(2)).
- Attach this to the Affidavit to fulfill requirement if an engineering team is planned for either the design or construction inspection.
- DESIGN FIRM: DESIGN ENGINEER'S NAME: AREA OF RESPONSIBILITY: TECHNICAL EXPERIENCE: GEOTECHNICAL FIRM: GEOTECHNICAL ENGINEER'S NAME: AREA OF RESPONSIBILITY: TECHNICAL EXPERIENCE: OTHERS: \_\_\_\_\_
- Date: \_\_\_\_\_ EIC Signature: \_\_\_\_\_

## Laws (statutes) vs. Regulations (COMAR)



### What is the main difference between Regulations (Code of Maryland Regulations – COMAR) and Statutes (law)?

- The Legislature enacts statutes.
- Administrative agencies adopt, amend and repeal regulations under the authority granted to them by statutes. Unless the Legislature has created an exemption, agencies must follow the procedures in the Administrative Procedure Act when adopting, amending or repealing regulations.

## Dam Statistics In Maryland



- There are 479 dams in Maryland;
- Age of dams – Ranges from >100 years to ones repaired in '12;
- Dam owners – federal, state, county agencies, cities, corporations, HOA, and individuals :  
(US F&W, USCOE, APG, PNB, DNR, DOT/DPW/DSWM/DP&R, JHU, UM, MNCPPC, Soil Conservation Districts, Cities (Annapolis, Baltimore, Frederick, Gaithersburg, Rockville, Salisbury, etc), Community Colleges, Energy Companies (Conowingo Dam, Deep Creek Lake, etc), WSSC, Boys Scouts, Revenue Authority, Golf Courses, Country Clubs, Corporations (Black & Decker, GE, National Geographic, etc), etc.
- Purpose – flood control, water-supply, recreation, irrigation, hydro-electric, wastewater, fire/stock, wildlife, tailings, stormwater management, dredged disposal, etc.
- Cost of repairs – Range from thousands to millions of dollars (\$\$)  
Hiring PE company, geotech engg, contractor, survey/dredging/grouting/landscape architect companies, etc
- Frequency of Inspections - High hazard dams (annually),  
Significant hazard dams (3-5 yrs); and  
Low hazard dams (7-10 yrs), or if problems occur

## Dam Hazard Classification



- **High Hazard Dams (80)** – Probable loss of > 6 lives; extensive property damage and major increases in existing flood levels at houses, buildings and highways;
- **Significant Hazard Dams (108)** – Possible loss of < 6 lives; significant property damage and major flood risks to roads and buildings;
- **Low Hazard Dams (281)** – Unlikely loss of life; minor increases to existing flood levels at roads and buildings, and mainly environmental damage.
- **Breached (10)**
- **TOTAL DAMS - 479 (May 2012)**

## Dam Safety Do's and Don'ts



### Don'ts:

- No trees or shrubs on the dam crest and slopes.
- Keep the US and DS toes clear of all vegetation;
- No animal burrows on the dam;
- No benches or structures like light poles, signage, etc on the dam or slopes;
- Don't tamper with riser structure to increase the pool elevation;
- Don't fill or build-out on the 'emergency spillway';
- Don't repair the dam without consulting MDE/SCD or hiring a PE who is specialized in dam safety work.
- Don't begin work without the proper MDE permits from Dam Safety, Non-Tidal Wetlands, Water Appropriation Division, etc.

### Do's:

- Mow the grass on the dam at least 2x/year;
- Exercise the low-flow/lake-drain/PS valves 2x/year;
- Conduct monthly inspection of dam by local staff;
- High and Significant dams – yearly inspection by PE;
- Every 5-years – manual/remote insp of PS and riser;
- High and Significant dams – Annual EAP updates;
- Provide local or remote training to dam staff;
- Hire dam safety approved PE for any dam repairs;



### Dam Safety Permitting Process

- Use the 'Joint Federal-State Application for Alteration of floodplain, waterway, tidal and non-tidal wetland in Maryland'. (*Available online*).
- Application copies will be disseminated by MDE to Army Corps, Non-tidal Wetlands & Dam Safety Divisions;
- Fees to be included in application (\$750 starting amount);
- Apply as soon as you have the plans, tech. reports ready;
- Check-mark for dam related repairs in the application form;
- Receive ack. Letter from Dam Safety with forms for EIC, MLR, Public Notice, etc.
- NTW will review for wetlands disturbance and COE for waterways construction;



### Emergency Action Plan (EAP)

- Non-structural method used to mitigate the consequences of dam failure
- EAPs are based upon the potential for downstream flooding
- Provide adequate warning and evacuation planning that can prevent extensive property damage and loss of life should the dam fail
- MDE requirement for an EAP for all 'High' and 'Significant' hazard dams in Maryland
- In 2007, MDE adopted new national EAP format



### Lake Needwood Dam, Mo. Co



Seepage on DS Slope at Lake Needwood Dam



Grouting Work on Lake Needwood Dam



Devil's Backbone Dam, WA. Co





## Dam Safety Contact Information

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