dcr
Massachusetts

Subject: Public Safety Notice Regarding Hazard Creep

Dear Dam Owner:

The Department of Conservation and Recreation (DCR) Office of Dam Safety (ODS) is contacting you to share information pertaining to a phenomenon known as "hazard creep" and how this phenomenon may change your regulatory obligations as a dam owner.

302 CMR 10.03 defines Hazard Potential Classification as the rating for a dam based on the potential consequences of failure. The rating is based on the potential for loss of life and damage to property downstream of the dam if failure occurred. The Hazard Potential Classification for a dam has no relationship to the current structural integrity, operational status, flood routing capability, or safety condition of the dam or its appurtenances. Per 302 CMR 10.06, there are three possible Hazard Potential Classifications for dams located in Massachusetts:

HAZARD POTENTIAL CLASSIFICATION TABLE

High Hazard Potential (Class I)	Dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).
Significant Hazard Potential (Class II)	Dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.
Low Hazard Potential (Class III)	Dams located where failure may cause minimal property damage to others. Loss of life is not expected.

The Hazard Potential Classification of a dam determines which regulatory requirements apply to a dam. A dam with a higher Hazard Potential Classification is subject to more stringent regulations, such as more frequent inspections, in the interest of public safety.

According to the Federal Emergency Management Agency (FEMA) publication numbered FEMA P-919, titled "Summary of Existing Guidelines for Hydrologic Safety of Dams", https://www.damsafety.org/resourcecenter/national-dam-safety-program-guidelines-flyers-and-other-tools#Technical%20Manuals,%20Flyers%20and%20Tools: the development of an area downstream of a dam often causes a condition called "hazard creep." Dams originally classified as Low Hazard Potential or Significant Hazard Potentials may later be reclassified as High Hazard Potential due to development downstream that occurs after construction of the dam and the initial assessment of Hazard Potential. These reclassified dams are then subject to additional regulatory requirements, including but not limited to, increased inspection frequencies and development of Emergency Action Plans, as well as becoming subject to increasingly conservative design standards and may require significant upgrading to pass flood events of a greater magnitude in order to protect downstream interests.

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According to another FEMA publication numbered FEMA P-94, titled "Selecting and Accommodating Inflow Design Floods for Dams", available for viewing at the following link: https://www.damsafety.org/resourcecenter/national-dam-safety-program-guidelines-flyers-and-other-tools#Technical%20Manuals,%20Flyers%20and%20Tools, "new development downstream of existing dams, a phenomenon referred to as risk creep, also commonly called hazard creep, is resulting in increased potential consequences that would occur if a dam were to fail. This evolution can result in the reclassification of many dams to a higher Hazard Potential Classification than they were originally determined to be, which requires greater spillway capacity and/or reservoir storage volume, often at substantial cost to the dam owner. As a result, the design of dams to withstand natural forces, including extreme hydrologic events, is an increasingly important matter of public safety and concern".

According to the Association of State Dam Safety Officials (ASDSO), dam safety regulators generally have no control over local zoning issues or developers' property rights, and so this issue continues to worry regulators as the hazard creep trend persists (https://www.damsafety.org/Roadmap#The%20Increasing%20Hazard:%20Summary%20of%20US%20Dam%20Data). The ASDSO has created a short, helpful video to demonstrate hazard creep, which is available for viewing at the following link: https://www.youtube.com/watch?v=5CcVSVhAYvA&list=PLt9aDt7bNpdyASEPeH7juGk--ZJ6oCUDu&index=7&t=15s.

As a result of the potential for hazard creep, the Massachusetts Dam Safety regulation, 302 CMR 10.06 (7) states, "[w]hile it is a recommended dam safety practice to review the classification of each dam during each subsequent periodic Phase I Formal Inspection, to ensure the accuracy of Hazard Potential Classification of dams, each dam owner shall hire a qualified Registered Professional Engineer to review the classification of their dam(s) at least on a frequency of ten (10) years or as otherwise ordered by the Commissioner". Please be advised that more information will be forthcoming in the future regarding your obligation to comply with this regulatory requirement.

As a dam owner, you are reminded that you are responsible for maintaining and operating your dam in a manner that is protective of public safety. Per 302 CMR 10.13 (1), you are reminded that a dam owner "shall be responsible and liable for damage to property of others or injury to persons, including but not limited to, loss of life resulting from the operation, failure of or mis-operation of a dam." You are, therefore, responsible for any adverse consequences that may occur downstream of your dam as a result of damage that occurs to your dam during an extreme rainfall event. It is recommended that you maintain the operability of your spillway and outlet works and always ensure they are free and clear of debris and obstructions to flow, especially during periods of significant rainfall and runoff events.

You are reminded that it is the obligation of the dam owner to contact and notify all applicable local, state, and federal permitting agencies prior to conducting any work at a dam including manipulation of water levels.

If you have any questions, please contact Office of Dam Safety at dam.safety@mass.gov or 617-620-8583. Thank you for your attention to this important public safety concern and for your anticipated cooperation.

Sincerely,

William C. Salomaa, Director
Office of Dam Safety