

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Agency

Department of Energy and Environmental Protection

Subject

Dams and Similar Structures

Inclusive Sections

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Dams and Similar Structures

Sec. 22a-409-1. Definitions. Registration of dams and similar structures.

(a) Definitions.

As used in Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies:

- (1) “Abutment” means natural ground that borders on either end of the dam structure.
- (2) “Acre-foot” means a unit of volume of water equal to 43,560 cubic feet or 325,853 gallons (one foot depth over one acre).
- (3) “Appurtenance” means any structure or mechanism other than the dam itself which is associated with its operation.
- (4) “Arterial roadway” means a roadway that provides a high level of mobility and that is frequently the route of choice for buses and trucks, as provided in the U.S. Department of Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.
- (5) “Breach” means an alteration of a dam either deliberately or accidentally in such a way as to release its impounded waters resulting in partial or total failure of the dam.
- (6) “Collector roadway” means a roadway that collects traffic from local roadways and connects traffic to arterial roadways, as provided in the U.S. Department of Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.
- (7) “Commissioner” means the Commissioner of Energy and Environmental Protection, or such commissioner’s designated representative.
- (8) “Certificate of Dam Registration” or “(CDR)” means a form issued by the commissioner to the owner that acknowledges receipt of all required information regarding a dam registration and a one-time payment of the registration fee.
- (9) “CT Dam ID Number” means a unique identifying number assigned to a dam registered and regulated by the State of Connecticut.
- (10) “Dam” means any barrier of any kind whatsoever which is capable of impounding or controlling the flow of water, including but not limited to storm water retention or detention dams, flood control structures, dikes and incompletely breached dams.
- (11) “Dam failure” has the same meaning as provided in section 22a-411a-1 of the Regulations of Connecticut State Agencies (RCSA).
- (12) “Dam height” means the vertical distance from the crest of a dam or similar structure to the downstream toe of such dam or similar structure.
- (13) “Embankment” means the fill material, usually earth or rock, placed with sloping sides providing a barrier which impounds water.
- (14) “Flood” means any high flow, overflow, or inundation by water which causes or threatens damage to persons or property.
- (15) “Hazard potential” means probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental damage.
- (16) “Local roadway” means a roadway that provides a high level of accessibility used

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to provide direct access to multiple properties, as provided in the U.S. Department of Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.

(17) “Operator” means the person(s) in control of, or having responsibility for, the daily operation of the dam as designated by the owner on the dam registration form required by subsection (b) of this section.

(18) “Owner” means the person(s) having legal ownership of the dam.

(19) “Person” has the same meaning as provided in section 22a-2(b) of the Connecticut General Statutes.

(20) “Professional engineer” means an individual who is currently licensed and registered under section 20-302 of the Connecticut General Statutes.

(21) “Regulated dam” means a dam subject to the jurisdiction of the Department of Energy and Environmental Protection pursuant to section 22a-401 of the Connecticut General Statutes.

(22) “Regulatory inspection” means an inspection required in accordance with section 22a-409(c) of the Connecticut General Statutes and section 22a-409-2(c) of the Regulations of Connecticut State Agencies.

(23) “Spillway design flood” or “SDF” means the largest flood that a given structure is designed to pass safely.

(24) “Structure” means the dam, its appurtenances, abutments and foundation.

(25) “Toe” means the base portion of the impounding structure which intersects with natural ground at the upstream and downstream sides.

(26) “100-year flood” means a statistical designation that there is a 1 in 100 chance that a flood of this intensity will occur at a particular geographical location during any year.

(b) **Registration.** The owner of any dam or similar structure required to be registered by section 22a-409(b) of the Connecticut General Statutes and that is not already registered shall register any such dam or similar structure with the commissioner on or before October 1, 2015. All registrations shall be submitted on a form prescribed by the commissioner and shall provide the following:

(1) The name, address, telephone number, and email address of the dam owner and operator;

(2) The name of the dam and impoundment and the CT Dam ID Number, if known;

(3) The street address of the dam location or the street address nearest to the dam location;

(4) The parcel ID number of the property where the dam is located, i.e. map, block, and lot number, or as otherwise designated by the town;

(5) The present condition of the dam;

(6) Whether there is a low-level outlet, and whether the low-level outlet is operable;

(7) A map showing the location of the dam in context to surrounding streets;

(8) A description of the materials used in constructing the dam;

(9) The dimensions of the impoundment;

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(10) The dimensions of the spillway;
(11) A statement of the use(s) of the impounded water;
(12) A check or money order payable to the DEEP Dam Safety Program for the amount of the registration fee required in accordance with section 22a-409(b) of the General Statutes; and

(13) Any other relevant information which the commissioner deems necessary.

(c) **Changes in registration information.** The owner shall report any change in the following information provided in the registration to the commissioner not later than ten (10) days from the date of such change:

(1) The name, address, telephone number, and email address of the dam owner or operator; and

(2) The name of the dam or its impoundment.

(d) **Certificate of Dam Registration (CDR).** Upon review of a complete registration, the commissioner shall issue a Certificate of Dam Registration (CDR) to the owner of the dam. A registration form shall not be deemed complete by the commissioner until all information specifically required by statute or regulation is submitted with the appropriate fee.

(e) **Fees.**

(1) The commissioner shall waive the registration fee for any dam which is owned by the State of Connecticut.

(2) Wherever an impoundment is formed by two or more dams, there shall be a single registration fee based on the highest dam forming the impoundment.

(3) Wherever a dam is owned by two or more owners there shall be a single registration fee.

(f) **Forfeiture and Injunction.** Failure to register a dam not previously registered, by October 1, 2015 shall subject the owner of the dam to the forfeiture and injunction provisions of section 22a-407 of the Connecticut General Statutes, as amended.

(g) **Violations.** Any violation of these regulations shall subject the owner of the dam to the injunction provisions of section 22a-6(3) of the Connecticut General Statutes, as amended, or an administrative civil penalty pursuant to sections 22a-6b-1 to 22a-6b-15 of the Regulations of Connecticut State Agencies or both.

(Effective June 23, 1986; Amended February 3, 2016)

Sec. 22a-409-2. Dam safety inspection and classification

(a) **Classification of Dams.**

(1) The commissioner shall assign each dam to one of five classes according to the potential impacts of a dam failure. The factors used to evaluate and assign a hazard potential are the physical characteristics of the dam, such as the dam height and capacity of the impoundment, the location of the dam, the areas impacted by a failure of the dam, and potential damage to property, infrastructure, or threat to human life as described below:

(A) A Class AA dam is a negligible hazard potential dam which, if it were to fail, would

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result in the following:

- (i) no measurable damage to roadways;
- (ii) no measurable damage to land and structures; and
- (iii) negligible economic loss.

(B) A Class A dam is a low hazard potential dam which, if it were to fail, would result in any of the following:

- (i) damage to agricultural land;
- (ii) damage to unpaved local roadways; or
- (iii) minimal economic loss.

(C) A Class BB dam is a moderate hazard potential dam which, if it were to fail, would result in any of the following:

- (i) damage to normally unoccupied storage structures;
- (ii) damage to paved local roadways; or
- (iii) moderate economic loss.

(D) A Class B dam is a significant hazard potential dam which, if it were to fail, would result in any of the following:

- (i) possible loss of life;
- (ii) minor damage to habitable structures, residences, including, but not limited to, industrial or commercial buildings, hospitals, convalescent homes, or schools;
- (iii) damage to local utility facilities including water supply, sewage treatment plants, fuel storage facilities, power plants, cable or telephone infrastructure, causing localized interruption of these services;

- (iv) damage to collector roadways and railroads; or
- (v) significant economic loss.

(E) A Class C dam is a high hazard potential dam which, if it were to fail, would result in any of the following:

- (i) probable loss of life;
- (ii) major damage to habitable structures, residences, including, but not limited to, industrial or commercial buildings, hospitals, convalescent homes, or schools;
- (iii) damage to major utility facilities, including public water supply, sewage treatment plants, fuel storage facilities, power plants, or electrical substations causing widespread interruption of these services;

- (iv) damage to arterial roadways; or
- (v) Great economic loss.

(2) The classification of a Class A, BB, B, and C dam shall be reviewed during each regulatory inspection.

(3) Dams shall be subject to reclassification at any time the commissioner determines that the hazard potential of the dam has changed.

(4) The dam owner may submit a request to change the hazard classification assigned to the owner's dam based on an analysis submitted to the commissioner that supports the reclassification. Recommendations made by the owner to reclassify the owner's dam shall

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be subject to review and approval by the commissioner.

(5) Where a dam is so located that its failure would likely cause a downstream dam to fail, the hazard classification of such dam shall be at least as great as that of the downstream dam.

(6) Potential damage to habitable structures shall be considered minor when habitable structures are not within the direct path of the probable flood wave produced upon failure of a dam and when such structures will experience the lower of the following elevations:

(A) No more than 1.5 feet of rise of flood water above the lowest ground elevation adjacent to the outside foundation walls; or

(B) No more than 1.5 feet of rise of flood water above the lowest habitable floor elevation of the structure.

(b) **Regulatory Inspections - Applicability.** The owner of a dam classified by the commissioner as Class C, B, BB, or A in accordance with subsection (a) of this section shall ensure a regulatory inspection is conducted for such dam in accordance with the requirements of this section except dams owned or regulated by the United States or its instrumentalities that are visually inspected on a regular basis in accordance with applicable federal requirements to the satisfaction of the commissioner:

(1) If the commissioner determines that a dam classified as AA poses a unique hazard, the commissioner may require its owner to conduct a regulatory inspection in accordance with this section except dams owned or regulated by the United States or its instrumentalities that are visually inspected on a regular basis in accordance with applicable federal requirements to the satisfaction of the commissioner.

(2) The state and each political subdivision of the state shall conduct a regulatory inspection of each dam owned by the state or such political subdivision, respectively

(c) **Regulatory Inspection Procedures.** All regulatory inspections shall be conducted by a professional engineer and use a standard dam inspection form and instructions that direct the proper use of the form. Both the inspection form and the instructions shall be developed by the commissioner and based upon accepted standards of visual dam inspection.

(1) Each regulatory inspection shall consist of, but not be limited to, the following:

(A) Visual inspection of the dam, its appurtenances, abutments, downstream toe and all other areas which could affect the safety of the dam. In addition, inspection and operation of mechanical systems, and inspection of the abutments downstream, the components of the dam which are under water during normal operation, or the interior of outlet conduits shall be made if deemed necessary by a professional engineer to more completely assess the condition of the dam;

(B) Review of all available file data related to the design, construction, post construction investigations, operation, maintenance and performance of the structure. This review shall supplement the visual inspection and aid in determining if additional analysis is required;

(C) Observation of the nature and extent of downstream development which would be subject to inundation in the event of a dam breach for purposes of assessing the potential

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hazard which the dam poses;

(D) Evaluation of the operation, maintenance and inspection procedures employed by the owner; and

(E) Evaluation of any other conditions which constitute or could constitute a hazard to the integrity of the structure.

(2) The professional engineer shall prepare a written report using a form prescribed by the commissioner detailing the findings of the regulatory inspection which shall include, but not be limited to, the following:

(A) An assessment of the condition of the structure based on the visual observations, available file data related to the design, construction, post construction investigations, operation, maintenance and performance of the dam, and

(B) Recommendations, if any are required as a result of the inspection and assessment, for:

(i) emergency measures or actions, if required to assure the immediate safety of the structure;

(ii) remedial measures and actions related to design, construction, operation, maintenance and inspection of the structure ;

(iii) additional detailed studies, investigations and analyses;

(iv) time periods appropriate for implementing the actions recommended in accordance with clauses (i), (ii), and (iii) of this subparagraph;

(v) routine maintenance and inspection by the owner,

(vi) a hydrologic and hydraulic analysis based on file data, visual observations, or information provided by the owner that indicates the capacity of the spillway is insufficient to safely pass the spillway design flood, or, at a minimum, the 100-year flood, if required; and

(vii) a stability analysis based on file data, visual observations, or information provided by the owner that indicates the stability of the dam may be structurally unsound under normal or extreme loading conditions.

(3) The owner shall furnish a copy of the written report to the commissioner not later than 30 days from the date he or she receives the report, but no later than March 15th of the year following the year the owner received the notification letter sent by the commissioner in accordance with section 22a-409(c) of the Connecticut General Statutes.

(A) Not later than thirty (30) days of receipt of a written request from the commissioner to perform recommended maintenance or repairs on the dam, the owner shall inform the commissioner in writing of the owner's schedule of implementation of any required recommendations. The commissioner's recommendations shall be based on the commissioner's review of the submitted inspection report and recommendations made by the owner's professional engineer contained in the report; and

(B) A copy of the report shall be kept on file with the records of the commissioner pertaining to dam safety.

(d) **Inspection Schedule.**

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A dam owner shall ensure a regulatory inspection is conducted as required by subsection (b) of this section according to the following inspection schedule:

<i>Hazard Class</i>	<i>Inspection Schedule</i>
Class A (low)	every 10 years
Class BB (moderate)	every 7 years
Class B (significant)	every 5 years
Class C (high)	every 2 years

(e) Fees for Inspection by the State.

(1) In the event the commissioner conducts a regulatory inspection of an owner's dam because such owner failed to do so, as required by subsection (b) of this section, such owner shall pay an inspection fee to cover the cost to the state for conducting the regulatory inspection. Any invoice for such fee shall be paid in accordance with the instructions on the invoice.

(2) The fee for each regulatory inspection made by the State of an owner's dam shall be \$3000.00.

(3) The commissioner shall waive the regulatory inspection fee for any dam which is owned by the State of Connecticut.

(f) Responsibility of the Owner.

(1) The requirement to ensure a regulatory inspection is conducted by a professional engineer does not relieve an owner of a dam of other legal duties, obligations or liabilities incidental to the ownership or operation of a dam.

(2) In addition to the regulatory inspections required by this section, the owner or operator shall inspect the dam on a regular basis to assure that no unsafe conditions are developing including, but not limited to, weather related damage, animal activity or vandalism. Class B and Class C dams shall be inspected by the owner or operator at least quarterly. Class BB dams shall be inspected by the owner or operator at least annually. Class A dams shall be inspected by the owner or operator at least every two years. A written record of said inspections shall be maintained by the owner or operator and be made available to the commissioner upon request.

(3) The owner or operator shall inspect the dam during and after the occurrence of major flood events to assure that the structure is withstanding the flood waters safely.

(4) The owner or operator shall fully and promptly advise the commissioner of any sudden or unpredicted floods, unusual circumstances or major changes in the condition of the dam.

(5) The owner or operator shall report to the commissioner any major damage which the dam has suffered, such as, overtopping by flood waters, erosion of the spillway discharge channel and any major problems which are observed to have developed, such as, new seepage or a significant increase in seepage quantities, settling, cracking or movement of the embankment or any component of the dam.

(6) To facilitate visual inspection during the intervals between regulatory inspections,

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the dam owner shall be required to maintain the structure and adjacent area free of brush and tree growth.

(A) Brush and tree growth shall be cleared from embankments and within twenty-five (25) feet of the upstream and downstream toe and the abutment embankment contact; and

(B) Grass on earthen embankment dams shall be established and maintained.

(7) The owner shall maintain a written record of all inspections and maintenance work performed. This record shall include observations made regarding areas of concern on the structure and descriptions of the major and minor repairs performed and materials utilized.

(g) Inspection by the Commissioner.

(1) The commissioner may enter upon private property at any time to investigate or inspect any dam for any reason, including, but not limited to, the following: the auditing of regulatory inspection reports, failure of the owner to conduct a regulatory inspection, to investigate a complaint, or as determined necessary after a flood event.

(2) Any inspection conducted by the commissioner in accordance with this subsection, including a regulatory inspection, shall be performed by a professional engineer or personnel of the DEEP Dam Safety Program with technical training in the inspection of dams and under the supervision of a professional engineer.

(Effective April 30, 1987; Amended February 3, 2016)