PROPOSED AMENDMENTS TO THE RULES
OF THE DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FOR DAM SAFETY, CHAPTER 391-3-8

The Rules of the Department of the Natural Resources, Chapter 391-3-8, for Dam Safety are hereby proposed for amendment.

[Note: Underlined text is proposed to be added. ~~Lined-through~~ text is proposed to be deleted.]

CHAPTER 391-3-8

391-3-8-.01 Purpose. ~~Amended.~~

The purpose of these Rules is to implement the responsibilities assigned to the Environmental Protection Division by the Georgia Safe Dams Act of 1978, (hereinafter the "Act"); ~~Part 3 of Article 5 of~~ O.C.G.A. §§ 12-5-370 et seq. These Rules are promulgated to provide for the inventory, classification, inspection and permitting of certain dams in order to protect the health, safety and welfare of all the citizens of the State by reducing the risk of failure of such dams to prevent death or injuries to persons.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.02 Definitions. ~~Amended.~~

For the purpose of these rules and regulations, the term:
(a) "abutment" means the bordering area of the dam site which functions as a support for the ends of the dam structure.
(b) "Act" means the "Georgia Safe Dams Act of 1978" as amended (O.C.G.A. 12-5-370 through 12-5-385).
(c) "appurtenant works" means such structures as spillways, either in the dam or separate therefrom; the reservoir and its rims; low level outlet works; access bridges; and water conduits such as tunnels, pipelines or penstock, either through the dam or its abutments.
(d) "Category I" means the classification where improper operation or dam failure would result in probable loss of human life. Situations constituting "probable loss of life" are those situations involving frequently occupied structures or facilities, including, but not limited to, residences, commercial and manufacturing facilities, schools and churches.
(e) "Category II" means the classification where improper operation or dam failure would not be expected to result in probable loss of human life.
(f) "conduit" means any closed waterway such as a cast-in-place cut-and-cover culvert, a precast or prefabricated pipe imbedded in the dam or foundation or a tunnel bored through the abutment used for the purpose of regulating or releasing water impounded by a dam.
(g) "construct" or "construction" means the building, removal or modification of any artificial barrier, together with appurtenant works for the impoundment or diversion of

water or liquid substances and shall include any activity which, other than routinely as part of an approved maintenance program, repairs, removes, or restores such artificial barrier, or alters its design, shape or structural characteristics, and shall also include any enlargement of such artificial barrier.
(h) "dam" means with the exception of the exemptions outlined in Rule 391-3-8-.04 herein, the following:
1. Any artificial barrier, including appurtenant works, which impounds or diverts water and which the improper operation or failure of such would result in probable loss of human life as determined pursuant to the Act, and which
(i) is twenty-five (25) feet or more in height from the natural bed of the stream or water course measured at the downstream toe or the lowest elevation of the outside limit of the barrier (whichever is lower) to the maximum water storage elevation; or
(ii) has an impounding capacity at maximum water storage elevation of one hundred (100) acre-feet or more.
2. Any artificial barrier, including appurtenant works, constructed in conjunction with the reclamation of surface mined land, and meeting the requirements of subsection 1. above, and when improper operation or failure would result in probable loss of human life.
(i) "small dam" means any artificial barrier meeting the requirements of subsection (h) above with a storage capacity not exceeding 500 acre-feet and a height not exceeding 25 feet.
(j) "medium dam" means any artificial barrier meeting the requirements of subsection (h) above with a storage capacity exceeding 500 acre-feet but not exceeding 1000 acre-feet or a height exceeding 25 feet but not exceeding 35 feet.
(k) "large dam" means any artificial barrier meeting the requirements of subsection (h) above and with a storage capacity exceeding 1000 acre-feet but not exceeding 50,000 acre-feet or a height exceeding 35 feet but not exceeding 100 feet.
(l) "very large dam" means any artificial barrier meeting the requirements of subsection (h) above and with a storage capacity exceeding 50,000 acre-feet or a height exceeding 100 feet.
(m) "engineer" means the State Conservation Engineer of the Natural Resources Conservation Service or the engineer of record.
(n) "engineer of record" - means an individual who:
1. Is a licensed engineer registered with the State of Georgia; and
2. Is competent and has relevant experience in areas related to dam investigation, inspection, design, and construction for the type of dam being investigated, inspected, designed, or constructed ; and
3. Understands adverse dam incidents, failures and the potential causes and consequences of dam failures; and
4. Will have responsible charge for the design of a new Category I dam or repair of an existing Category I dam; and
5. Has substantiated their qualifications to the Georgia Safe Dams Program prior to their engagement by an Owner/Operator of an existing or proposed Category I Dam.
(o) "flood control pool" means the storage volume of the entire reservoir at the crest of the emergency spillway.
(p) "flood control zone" means the storage volume available between the normal pool and the flood control pool.

(q) "foundation" means the earth or rock which the dams rests.
(r) "freeboard" means the difference in elevation between the top of the dam and the maximum reservoir water surface that would result should the inflow design flood occur and should the outlet works function as planned.
(s) "hydrometeorological gauges" means any of a variety of measuring devices used in determining data concerning rainfall, snow, fog, dew, etc.
(t) "impoundment" means the water or liquid substance that is or will be stored by a dam--commonly referred to as the reservoir.
(u) "maximum water storage elevation" means the elevation of the lowest point of the top of the impoundment structure independent of low points caused by partial failure or collapse.
(v) "normal pool" means the reservoir storage volume at normal storage elevation.
(w) "normal water storage elevation" means the normal elevation of water surface which is obtained by the reservoir when the intake and outlet works are operating as planned during periods of normal precipitation and runoff and not during periods of drought or flood.
(x) "principal spillway" means the spillway which conveys normal runoff out of the reservoir.
(y) "probable maximum precipitation (PMP)" means the greatest amount of rainfall of a six-hour duration which would be excepted for a given drainage basin as determined by Hydrometeorological Report No. 52 published by the U.S. Weather Bureau.
(z) "spillway" means the feature of a storage or detention dam which is designed to released surplus water which cannot be contained in the allotted storage space, and at diversion dams is a means to bypass flows exceeding those which are turned into the diversion system.
(aa) "structural height" means the height of the dam measured from the lowest point of the dam's foundation to the highest point on the top of the dam.
(bb) "surcharge zone" means the reservoir of the storage volume located between the crest of the emergency spillway (flood control pool) and the maximum water storage elevation.
(cc) "surface mining" means any activity constituting all part of a process for the removal of minerals ores and the solid matter for sale or for processing or for consumption in the regular operations of a business. However the removal of mineral ores and other solid matter by tunnels, shafts, and dimension stone quarries shall not be considered surface mining.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.03 Inventory and Classification. ~~Amended.~~

(1) It shall be the duty of the Director to inventory the dams in this state and to classify each dam into one of the following categories:
(a) Category I Dam; or
(b) Category II Dam.
(2) The inventory shall consist of all dams not excluded under Rule 391-3-8-.04 subsections (a), (b), (c), (e) and (f).

~~(3) The inventory and classification of dams including proposed structures shall be carried out in accordance with the Safe Dams Program Quality Assurance Plan.~~
(4<u>3</u>) When an existing Category II dam may be reclassified to a Category I dam because of proposed development downstream of the dam, the governing authority issuing the permit for the development shall provide for review by the Safe Dams Programs the following information:
(a) location<u>s</u> of the Category II dam and the proposed development; and
(b) a surveyed cross-section of the stream valley at the location of the proposed development<u>,</u> including proposed finished floor elevations; and
(c) a dam breach analysis ~~using the Dambreak computer model~~ to establish the height of the flood wave in the downstream floodplain. The ~~dambreak modeling~~<u>analysis</u> shall be completed by an engineer in accordance with the <u>current version of the</u> Safe Dams Program ~~Quality Assurance Plan~~<u>Engineer Guidelines</u>.
(~~5~~<u>4</u>) If the Director determines that an existing Category II dam will be reclassified to a Category I dam if the proposed development occurs, then the owner of the existing Category II dam may request an inspection from the Director within ten (10) days of notification of the proposed development by the local governing authority. The preliminary visual inspection shall be carried out in accordance with ~~subsection (2), paragraph (b), and subsection (3), paragraph (d), subparagraph (ii)(1) and (2) under~~ Rule 391-3-8-.08<u>(2)(b) and Rule 391-3-8-.08(3)(d)(2)(i) & (ii)</u>. Detailed surveys, hydrologic and hydraulic analyses will not be performed, however<u>,</u> the Director may provide an opinion on the hydraulic adequacy of the dam.
(~~6~~<u>5</u>) A written evaluation of the existing Category II dam's compliance with Category I requirements will be provided to the owner of the dam and the local governing authority based on the preliminary visual inspection by the Safe Dams Program.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.04 Scope and Exclusions. ~~Amended.~~

<u>(1)</u> These rules and regulations shall apply to any dams or artificial barriers existing or constructed in Georgia except for the following:
(a) ~~a~~<u>A</u>ny dam owned and operated by any department or agency of the United States government;
(b) ~~a~~<u>A</u>ny dam constructed or financially assisted by the United States Natural Resources Conservation Service or any other department or agency of the United States government<u>. This exemption only applies</u> when such department or agency designed or approved plans and supervised construction<u>,</u> and maintains a regular program of inspection of the dam<u>.</u>~~; provided, however, that t~~<u>T</u>his exemption shall cease on November 1, 1995, for all such dams <u>for</u> which the supervising federal agency has relinquished authority for ~~the~~ operation and maintenance ~~of such dam~~ to a person<u>,</u> unless the supervising federal agency certifies by the said date and at least biannually thereafter to the Director that such dams are in compliance with requirements of this part, including minimum spillway design, and with the maintenance standards of the supervising federal agency;
(c) ~~a~~<u>A</u>ny dam licensed by the Federal Energy Regulatory Commission, or for which a licensed application is pending with the Federal Energy Regulatory Commission;

(d) ~~a~~Any dam classified as a Category II Dam;
(e) ~~a~~Any artificial barrier, except as provided in Rule 391-3-8-.02 (h), constructed in connection with and incidental to surface mining, provided that upon completion of mining the impoundment created by the barrier is drained and reclaimed or stabilized as a lake pursuant to a mined land use plan approved by the Director pursuant to the Georgia Surface Mining Act;
(f) ~~a~~Any artificial barrier which is not in excess of 6 feet in height, regardless of storage capacity, or which has a storage capacity at maximum water storage elevation not in excess of 15 acre-feet, regardless of height.
(2) The terms “dam owner” or “dam operator” in this chapter shall not refer to the owner of fee title to land on which a dam exists that was constructed by a governmental entity and for which a governmental entity has an easement. In such cases, the terms “dam owner” or “dam operator” in this chapter shall refer to the governmental entity that has an easement. The fee title land owner is not responsible for operating, maintaining, and/or inspecting the dam in such situations.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.05 Application for a Permit. ~~Amended.~~

(1) No Person shall operate or construct a dam as defined by the Act and these Rules without first having obtained a permit from the Division; provided, however, any person~~s~~ who is operating a dam may continue such operation ~~or construction~~ pending final action by the Director on the permit application, and provided such application has been filed with the Director within 180 days after ~~by the Director~~ that permit is required by the Director.
(2) Permit applications shall be on forms as may be prescribed and furnished by the Division.
(3) The Director may require the submission of plans, specifications, and other information as he deems relevant to the application.
(4) If a permit application for the construction of a dam is not approved by the Director, the application shall be returned to the applicant along with the reasons for its disapproval.
Such applicants may reapply for said permit by correcting deficiencies in the application and resubmitting the application to the Director.
(5) Permits shall not be transferred from one person to another without the approval of the Director. If the ownership changes from one person to another, the new owner shall immediately notify the Director in writing of such transactions. The Director shall also be notified of any proposed change in the operation of the dam.
(6) Permits shall not be transferred from one dam to another dam.

391-3-8-.06 Revocation, Suspension or Modification of Permits. ~~Amended.~~

Permits may be revoked, suspended, or modified, or denied by the Director for cause, including but not limited to the following:
(a) violation of any permit condition;

(b) failure to fully disclose all relevant facts or obtaining a permit through misrepresentation;
(c) violations of the Act or these Rules;
(d) changes in conditions that require such action on a permit in order to insure compliance with the Act or these Rules.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.07 Dam Removal. ~~Amended.~~

No person may remove a dam without the approval of the Director in accordance with the procedures required by ~~Section 8 of~~ the Act.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.08 Permits for the Construction and/or Operation of New and Existing Dams. ~~Amended.~~

(1) New Dams
(a) Applications for a permit to construct and operate a Category I dam shall be accompanied by a statement from an engineer who provides engineering design services for the dam, certifying that he/she has the necessary training and experience to design such dam, and that to the best of his/her knowledge, understanding and belief such design meets the standards of the Act and these Rules. If the design engineer determines that a geological investigation of the dam is advisable, such investigation shall be conducted by a professional geologist registered to practice in the State of Georgia.
(b) As an alternative to a certificate from an engineer, the Director may accept a permit application accompanied by a certificate from the State Conservation Engineer of the Natural Resources Conservation Service stating that the design of the dam meets the standards of this Act and the rules and regulations promulgated hereunder.
(c) Construction of such dams shall be completed in the time frame stated in the special conditions of the Construction and Operation Permit.
(d) Notice by registered mail shall be given to the Director at least 10 days prior to the commencement of construction for permitted dam construction activities.
(2) Existing Dams
(a) Permits for the operation of existing dams ~~in existence~~ may be issued provided the application for a permit is judged complete and meets the requirements of the Act and these Rules.
(b) When a visual inspection, performed by an engineer, reveals that abnormal stress exists or that the dam was not constructed in accordance with the requirements of the Act or these Rules, a detailed engineering survey meeting the requirements of this section shall be performed prior to final action on the permit application. Such visual inspection may be provided by the applicant, in accordance with Section 12-5-376(g) of the Act, or by the Division, or by another authorized agency under contract with the Director on behalf of the Division.

(3) Applications for permits for existing or ~~proposed~~new dams shall include the following evaluations and information, when such information is relevant and available, as determined by the Director:
(a) A regional vicinity map showing the location of the existing or ~~proposed~~new dam and the latitude and longitude of the center of the dam expressed to the nearest second, the watershed drainage area, and the downstream area subject to potential damage due to failure or misoperation of the dam or operation equipment (including other artificial barriers or downstream fixed improvements which would be affected);
(b) A detailed description of the existing or ~~proposed~~new dam, including:
~~(i)~~1. p~~P~~roposed or as-built drawings indicating plans, elevations and sections of the dam and appurtenant works including details of the discharge facilities such as outlet works, limited service and emergency spillways, flashboards, fuse plugs and other operation equipment;
~~(ii)~~2. the elevation of the top and lowest outside limit of the dam, and the elevation of the lowest upstream and downstream toe;
~~(iii)~~3. the profile of the top of the dam and the dam's structural height;
~~(iv)~~4. the maximum and normal storage elevation, hydraulic heights and freeboard and storage capacity associated with each elevation;
~~(v)~~5. the surface area of the impoundment;
~~(vi)~~6. the top and bottom width of the dam;
~~(vii)~~7. the elevation of the crest, type, width or diameter; length and location of spillways and the number, size and type of gates if the structure is controlled;
~~(viii)~~8. the type, location, entrance and exit inverts of outlet works, and emergency drawdown facilities;
~~(ix)~~9. the location, crest elevation, and description of the invert, sides, and length of limited service and emergency spillways;
~~(x)~~10. the location and description of flashboards and fuse plugs, including hydraulic head (pool elevation) and other conditions required for breaching along with the assumed results of breaching;
~~(xi)~~11. the type, location, observations and records of hydrometeorological gauges appurtenant to the project;
~~(xii)~~12. the maximum non-damaging discharge causing only negligible damage at potential damage locations downstream;
~~(xiii)~~13. the location and description of any proposed or existing instrumentation including, but not limited to, observation wells, piezometers, settlement devices, seepage outlets and weirs; and
~~(xiv)~~14. the location, elevation and description of areas affected by reservoir fluctuation.
(c) Design and safety evaluation reports, including:
~~(i)~~1. a hydrological analysis of the ~~proposed~~new or existing dam, reservoir, drainage basin system including computation of the basin P.M.P. or the design storm event, average watershed slope, watershed area, hydrologic soil groups, land use of impoundment watershed, reservoir inflow hydrograph, spillway and exit water-surface profiles, flow rate, expected frequency of emergency spillway use and minimum freeboard;
~~(ii)~~2. analysis and/or evaluation of the ~~proposed~~new or existing dam that indicates that the dam will be stable during construction (new dams), filling (new dams) and under all

conditions of reservoir operations including assumed material properties and all pertinent applied loads;
~~(iii)~~3. evaluation of seepage and measures taken to control seepage through the embankment, foundation, and abutments so that no internal erosion will take place and that there will be no significant sloughing in the area where the seepage emerges;
~~(iv)~~4. evaluation of the geology of the site and foundation including any boring logs or laboratory testing with engineering conclusions, foundation data, geological maps, profiles and cross sections, foundation treatment, and any relevant seismic information;
~~(v)~~5. evaluation of materials in the foundation and embankment including results of any laboratory tests, field permeability tests, construction control tests, and assumed design or evaluation properties of materials;
~~(vi)~~6. the properties of concrete including source or proposed source of aggregate, mix design, type of cement and additives, and the result of testing during construction;
~~(vii)~~7. evaluation or design of cover (vegetation, masonry, or riprap) to protect the upstream slope, crest, and downstream slope of the dam and abutments against erosion from wind, waves and runoff;
~~(viii)~~8. the proposed water control plan, including the regulation plan under normal conditions and during flood or other emergency conditions;
~~(ix)~~9. analysis of the anticipated time required to completely drain the flood control zone and normal pool;
~~(x)~~10. the electric and mechanical equipment types and rating of normal and emergency power supplies, hoists, cranes, valves and valve operators, control and alarm systems, and other electrical and mechanical equipment systems that could affect the safe operation of the dam;
~~(xi)~~11. the spillway and tailwater rating curve below the dam site, including the elevation corresponding to the maximum design flood discharge and approximate nondamaging channel capacity; and
~~(xii)~~12. evaluation and/or analysis of settlement estimates and steps adopted to compensate for total settlement and to minimize differential settlements;
(d) Other data requirements for new and existing dams:
~~(i)~~1. New Dams:
~~1.~~(i) the proposed method of construction and quality control provisions for the project, including the responsibilities of the applicant, the design engineer, the builder, and the prescribed order of the work;
~~2.~~(ii) the proposed dam construction schedule and filling schedule for the reservoir;
~~3.~~(iii) the proposed inspection and maintenance plan;
~~4.~~(iv) the proposed instrumentation and monitoring plan including the filling surveillance plan;
~~5.~~(v) the estimated life of the dam and reservoir; and
~~6.~~(vi) any other pertinent data as may be required by the Director;
~~(ii)~~2. Existing dams:
~~1.~~(i) detailed description of the condition of the dam and appurtenant works resulting from a detailed visual inspection, including a description of any signs of structural deterioration and seepage such as, but not limited to, surface cracks, settlement, structural condition of any conduits through the dam, and erosion;
~~2.~~(ii) the year of construction, and the date and description of any modifications or repairs to the dam;

~~3.~~(iii) the construction history of the dam, including the diversion scheme, construction sequence, pertinent construction problems, alterations, modifications, and major maintenance repairs;
~~4.~~(iv) a summary of past major flood events or previous failures or known deficiencies of the dam, including any experiences that presented a threat to the safety of the project or to human life and any action taken to correct or eliminate such hazards;
~~5.~~(v) the records of performance observations, including instrumentation records;
~~6.~~(vi) the inspection history of the dam, including the results of the last safety inspection, the organization that performed the inspection, and the date the inspection was performed; and
~~7.~~(vii) Any other pertinent information as may be required by the Director.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.09 Standards for the Design and Evaluation of Dams. ~~Amended.(~~

(1) The design and/or evaluation of new and existing dams shall conform to accepted practices of the engineering profession and dam safety industry. Design manuals, evaluation guidelines, and procedures used by the following agencies can be considered as acceptable design or evaluation references, except as those references differ from Georgia Law and these regulations:
(a) U.S. Army Corps of Engineers;
(b) Natural Resources Conservation Service;
(c) U.S. Department of Interior, Bureau of Reclamation;
(d) Federal Energy Regulatory Commission~~;~~.
(2) Other design and evaluation methods may be used to demonstrate compliance with the objectives of these rules, but are subject to the approval of the Director.
(3) Design and Evaluation of Dams under ~~P~~paragraph (1) and (2) above shall, as a minimum, consider the following basic principles:
(a) All dams must be stable under all conditions of construction and/or operation of the impoundment. Details of stability evaluation shall be submitted to the Director for approval. Analyses using the methods, guidelines and procedures of the agencies listed in
~~P~~paragraph (1) yielding the following Minimum Safety Factors can be considered as acceptable stability:
1. Earthen Embankments
~~1.~~(i) End of Construction: 1.3
~~2.~~(ii) Steady State Seepage: 1.5
~~3.~~(iii) Steady State Seepage with Seismic Loading: 1.1
~~4.~~(iv) Rapid Drawdown (Upstream): 1.3
~~5.~~(v) Submerged Toe with Rapid Drawdown: 1.3
2. Concrete Structures (cohesion included)
~~1.~~(i) Normal Reservoir: 3.0
~~2.~~(ii) Normal Reservoir with Seismic Loading: 1.0
~~3.~~(iii) Design Flood: 2.0
(b) Details of the engineering evaluation of material properties in the dam or appurtenant structures shall be submitted to the Director for review and approval.

Conservative selections for soil strength values shall be used for analyses or evaluations. Details of any foundation investigation and laboratory testing supporting assumed design or evaluation parameters shall be included for review.
(c) All dams and appurtenant structures shall be capable of withstanding seismic accelerations defined in the most current "Map for Peak Acceleration with a 2% exceedance in 50 years" for the contiguous United States published by the United States Geological Survey (~~a.k.a.~~ NEHRP maps). The minimum seismic acceleration shall be 0.05g . The seismic accelerations may be reduced or seismic evaluation eliminated if the applicant's engineer can successfully demonstrate to the Director by engineering analyses or judgment that smaller seismic accelerations are appropriate or no seismic evaluation is needed.
(d) All dams shall have a means of draining the reservoir to a safe level as demonstrated by the applicant's engineer. The submittal by the applicant's engineer shall include the computation of the maximum time required to drain the reservoir. Exceptions to this rule may be given by the Director based on an engineering evaluation demonstrating the lack of this capability would not endanger the public.
(e) All earthen embankments shall be protected from surface erosion by appropriate vegetation, or some other type of protective surface such as riprap or paving, and shall be maintained in a safe condition. Examples of appropriate vegetation include, but are not limited to, Bermuda, Tall Fescue, Centipede grasses and Lespedeza sericea. Inappropriate vegetation on existing dams such as trees shall be removed only after consultation with the Division or other qualified persons on the proper procedures for removal. Hedges and small shrubs may be allowed on existing dams if they do not obscure inspection or interfere with the operation and maintenance of the dam.
(f) Design Storm. Each dam shall be capable of safely passing the fraction of the flood developed from the PMP hydrograph depending on the subclassification of the dam. The design storm for each subclassification of a dam is as follows:
1. Small Dam: 25 percent PMP
2. Medium Dam: 33.3 percent PMP
3. Large Dam: 50 percent PMP
4. Very Large Dam: 100 percent PMP
5. Based on visual inspection and detailed hydrologic and hydraulic evaluation, including documentation of completed design and construction procedures, up to a 10 percent lower design storm requirement (22.5, 30, 45, or 90 percent) may be accepted on existing Public Law 566 (PL-566), ~~(~~including ~~RC&D~~ Resource Conservation & Development structures~~)~~, and Public Law 534 (PL--534) Project Dams at the discretion of the Director, provided the project is in an acceptable state of maintenance. The design storm requirement may be reduced on existing dams if the applicant's engineer can successfully demonstrate to the Director, by engineering analysis, that the dam is sufficient to protect against probable loss of human life downstream at a lesser design storm. Earthen emergency spillways shall not function until the 50 year storm.
(g) Seepage Control. All dams shall be able to prevent the development of instability due to excessive seepage forces, uplift forces, or loss of materials in the embankment, abutments, spillway areas, or foundation. For new dams, seepage analysis for design, and inspection during construction, shall be in sufficient detail to prevent the occurrence of critical seepage gradients.

~~(i)~~1. For new dams, the design shall include a seepage control method ~~which~~that meets the minimum acceptable safety standards, as determined by the Division. All internal drainage systems with pipe collection systems shall have cleanouts.
~~(ii)~~2. In existing dams, seepage shall be investigated by an engineer and appropriate control measures shall be taken as necessary.
(h) Monitoring Devices.
~~(i)~~1. Monitoring devices, including but not limited to piezometers, settlement plates, telltale stakes, seepage outlets and weirs, and permanent bench marks may be required by the Director for use in the inspection and monitoring of the safety of a dam during operation.
~~(ii)~~2. Where appropriate f~~F~~or new ~~dams~~ or existing dams ~~where appropriate~~, a reservoir filling monitoring and surveillance plan to be implemented during reservoir filling or re-filling shall be submitted to the Director for approval prior to start of filling or re-filling.
(i)~~.~~ Design Life. The design life for ~~proposed~~new dams and reservoirs shall be adequate for the dams and reservoirs to perform effectively as planned, as determined by the following criteria:
~~(i)~~1. The time required to fill the reservoir with sediment from the contributing watershed; and
~~(ii)~~2. The durability of appurtenances and materials used to construct the dams.
(j) Freeboard. Appropriate freeboard for wave action shall be considered by an engineer through engineering analysis. The required freeboard shall be provided above the maximum reservoir surface elevation that would result from the inflow from the design storm for the structure. The resulting maximum reservoir surface elevation plus freeboard shall determine the elevation of the top of the dam. In lieu of determining the appropriate amount of freeboard by engineering analysis, a minimum of three (3) feet of freeboard shall be provided on earthen dams.
(k) Existing concrete and/or masonry dams and appurtenant structures shall be structurally sound and shall have joints free of trees and other vegetation and shall show no signs of significant structural deterioration such as excessive cracks, spalling, efflorescence and exposed reinforcing steel.
(4)~~.~~ Other design standards may be imposed as deemed appropriate by the Director after review of design of new structures or through a visual inspection of an existing structure conducted pursuant to Rule 391-3-8-.08(2)(b) of these regulations, or based on a review of the detailed engineering study prepared by an engineer.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.10 Inspection and Maintenance Plan Requirements. ~~Amended.~~
(1) Dam Owners and operators of dams shall be responsible for conducting routine inspection and maintenance of dams necessary to:
(a) Prevent the growth of trees or brush on the embankment of the dam and on the spillway system;
(b) Prevent the accumulation of debris, obstructions, or other deleterious materials from the spillway system;
(c) Insure that all gates, orifices, dissipators, trash racks, and other appurtenances that affect the proper operation of the dam and reservoir are kept in good repair and working order, and that spillway and outlet gates necessary to pass flood flows shall be test

operated at least once each year. The dam owner shall file an affidavit with the Director certifying that such gates and other appurtenances ~~and gates~~ are in good repair and working order;
(d) Maintain adequate and suitable vegetation to prevent erosion of the embankment and earthen spillway for the dam;
(e) Determine that any seepage on the downstream slopes of the dam does not exceed normal amounts and does not present a situation indicative of potential dam failure. At any time where there is a question~~s~~ regarding seepage and potential dam failure, the Director shall be notified in writing and provided a description of the situation~~,~~; and
(f) Dam owners shall immediately notify the Division when symptoms of failure, including but not limited to, erosion, surface cracks, seepage, settlement, or movement occur.
(2) As part of the routine inspection and maintenance program described in Rule 391-3-8-.10(1), and in addition to any specific inspection and maintenance program requirements included in the permit, dam owners and operators shall ensure their dam is inspected, and reports are submitted to the Division, based upon the following schedule:
(a) The dam owner shall inspect the dam each calendar quarter. This inspection may be conducted by the dam owner or the dam owner may hire someone to do the inspection on their behalf. This inspection is not required to be conducted by an engineer. Calendar quarters are January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31;
(b) Except as provided in paragraph (c) below, the dam owner shall have the dam inspected by an engineer at least every two years. This inspection shall be conducted between October 1 and March 31, commencing with October 1, 2017. This inspection shall satisfy the inspection requirement in paragraph (a) above for the October 1 through December 31 and January 1 through March 31 quarterly inspections;
(c) For any dam that is less than 50 feet tall and that the dam owner has conducted at least four consecutive quarterly inspections in accordance with paragraph (a) above, the owner may submit to the Division a waiver request by October 1 for one two-year cycle of the engineer inspection required under paragraph (b). The waiver request shall be approved unless the Division denies the request in writing within 30 days of receipt of the waiver request. Reasons to deny the waiver request include, but are not limited to, inspection reports showing deficiencies that have not yet been corrected or Division enforcement actions within the past twenty-four months;
(d) For the purpose of Rule 391-3-8-.10(2), the term “engineer” shall have the same meaning as defined in Rule 391-3-8-.02(m), and may also include any professional engineer registered by the State of Georgia.
(e) As stated in Rule 391-3-8-.10(1)(f), dam owners shall immediately notify the Division when symptoms of failure are observed. Otherwise, dam owners shall submit the inspection reports to the Division using the Division approved form by April 30 for all inspections conducted between April 1 of the preceding calendar year and March 31 of the current calendar year.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.

391-3-8-.11 ~~Effective Date. Amended.~~Emergency Action Plans.

~~This Chapter shall become effective on October 25, 1998.~~
Dam owners of Category I dams shall develop, and submit to the Division for approval, Emergency Action Plans (EAP) using the Division approved format.
(a) Owners of dams that are classified as a Category I dam on, or after, October 1, 2016 shall submit the Emergency Action Plan as part of their application submitted in accordance with Rule 391-3-8-.05.
(b) Owners of dams that were classified as a Category I dam before October 1, 2016 shall submit the Emergency Action Plan by July 1, 2017.

Authority O.C.G.A. Secs. 12-5-370 through 12-5-385.